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Simple Ways to Stop Robbing

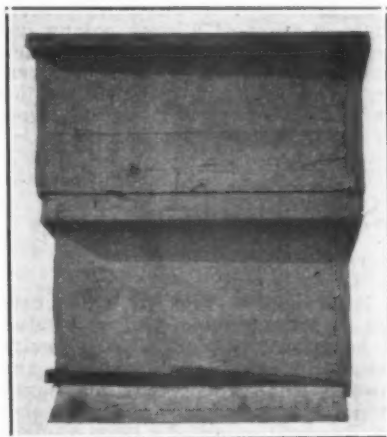
By J. E. Crane.

THERE is nothing more vexatious and perplexing to a young beekeeper than "robbing," and it is for the benefit of young beekeepers or those new in the business that this article is written. If one only could just tell when bees are at this wicked business it would be so much easier to know what to do, but there is the trouble; you don't know. It is like fighting an enemy in the dark.

Well, let us see if we can recognize it. In looking over your bees you may find some hives where the bees are fighting near the entrance. This is a "sign," but not a sure sign. They may only be trying to rob, but the guards are keeping the robbers from getting into the hive. Again, you may see bees flying very freely from some hive. This, too, is a "sign," but not a sure one, for it may be only the young bees flying out to get a little exercise and strengthen their weak muscles. But look carefully. If they are flying quietly and peacefully they are all right, but if you see undue excitement and bees trying to get in through every crack or crevice about the hive, you may be pretty sure there is robbing going on, for doesn't the Good Book say, "He that enters not in by the door, but climbeth up some other way, the same is a thief and a robber"? If you see bees coming out of the hive with abdomen distended and running to the edge of the alighting board before they take flight, you may be sure robbing is going on and honey going out instead of coming in.

Before discussing remedies let us look up the cause of robbing, for "an ounce of prevention is worth a pound of cure." Bees rarely or never rob when nectar is to be found in the fields, but if the flow of nectar is cut off, look out. Old bees from strong colonies will be testing every hive in the yard to get at their stores of honey, and there is danger, especially to weak or queenless colonies or such as have little ambition to protect their stores. But the most prolific cause of robbing is opening hives or exposing combs or honey, for bees to get a taste, and before you know it a row is on and a whole yard may become demoralized and good honest bees turn to the worst of robbers.

How shall we prevent it? It will help if we keep the entrances of nuclei or weak colonies small, so a few bees can guard it; and it is better if the brood chamber is reduced to the size of the colony. Same with queenless colonies. In opening hives, when nectar is scarce, great care should be taken not to expose combs



Robber guard at hive entrance. A two-inch strip nailed to blocks makes portico easily defended.

for robber bees to get a taste. The hive should be opened and closed as quickly as possible, that the odor of honey may not fill the air. If a comb or two is taken out for a few moments, as, for instance, when looking for a queen, it is well to have a box or a light, small hive to put them in and cover with a cloth tightly. I have sometimes used an atomizer filled with carbolic acid for spraying the front of the hive before opening. This works well, indeed very well, and has seemed a perfect protection against robbing.

Some years ago I went to inspect quite a large yard of bees. The proprietor said he had not been able to open a hive of bees for two or three weeks without first taking it into a wire-screened building to prevent robbing. Using an atomizer with carbolic acid, I was able to go through the yard, keeping the hives open as

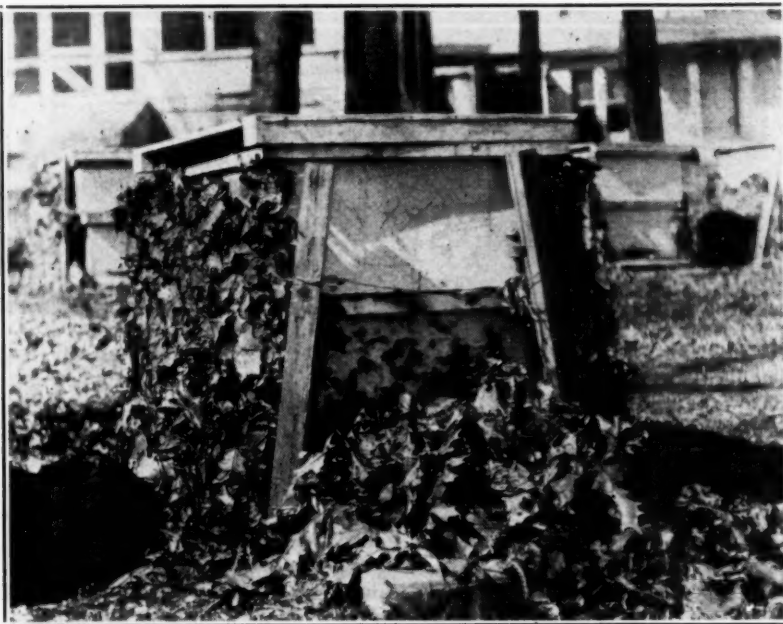
long as I wished, without scarcely seeing a robber bee.

Alas! it is easier to tell others just what to do than to always do well ourselves.

In the hurry of handling bees we are not as careful as we should be, and, quite too frequently, have a bad case of robbing on our hands.

What shall we do? Someone says: Contract the entrance. I tried it some years ago and soon had combs melting down and honey running out from the bottom of the hive, so the robbers did not need to go inside to get a load. Better not do it. Better leave entrance wide open and instead throw over it and in front of hive some grass, hay, weeds or twigs with green leaves on. The hive that was unable to protect itself may now send out a crowd of guards all through the grass and robber bees hesitate to storm such a fortress. If the grass is sprinkled with water, so much the better. I have even had to use kerosene before I could drive them off. This method is usually effective, but another way is even better, I think. As soon as you discover a bad case of robbing just move the hive back three or four feet and set an empty hive in its place, then throw some grass or weeds in front of the hive you moved back, and the robber bees, as they return for another load, will enter this empty hive and then fly out and take another look, enter again only to find the honey they were looking for gone, while the hive that was being looted is soon rid of its unwelcome guests, and gets accustomed to its new location and all goes well.

Another method of dealing with robbers should be mentioned, especially if you use single-walled hives. Make a light decoy hive same size as your regular hive; but instead of the regular entrance, bore an inch hole just above where the entrance to your hive is and insert a cone-shaped bee escape about three inches long and one inch in diameter at the large end and one-fourth inch at small end, or just large enough for a bee to go through. Galvanized wire cloth of about one-eighth-inch mesh is the best material of which to make it.



Leaves thrown against entrance to stop robbing.

Let the small end go into the hive. It is better to have this hive ventilated from the bottom and made bee tight. Now, if you have a bad case of robbing, just move your hive back a little and set your decoy hive in its place. The robbers coming back for another load, not finding the entrance open, will soon find the hole with the escape, and enter only to find themselves locked up and unable to get out. In a day or two the rob-

bers will all, or at least the most of them, be caught, when you can dispose of them as you think best. Perhaps the best way would be to place them in a dark room, feed them well, and, after two or three days, shake them in front of a weak colony just before dark. You could doubtless unite them with the hive they were trying to rob, and they will be just as ready to protect it as they were to rob it a few days before.

How to Avoid Sour Honey

By Earl Peterson.

Sour honey, or to be more exact, honey that develops a sharp taste and gas sufficient to puff and even break the cans, has been more or less prevalent for years in the Salt River Valley. It is especially embarrassing to the shipper who buys it before it develops gas and breaks the cans, or what is worse, has it rejected a few thousand miles away, where it is sold.

Usually it is discovered before shipment, but in any case it is a loss for several reasons after it has been canned. New cases are often necessary, the flavor of the honey and color are often impaired in heating to kill the ferment, and much labor is necessary to uncane it, especially if it is partly candied.

It therefore behooves the grower to can no honey that develops bubbles indicating ferment, until it has sufficiently evaporated by being allowed to stand open in a large tank. If this does not cure it, the honey should be canned and heated to almost the boiling point in water or in a large water-jacketed tank before canning long enough to kill all germs of fermentation.

The Arizona Honey Exchange owns

a large shallow tank in which cans can be set, surrounded by hot water. It holds twenty-four cans or twelve cases and can be secured by any grower who thinks that his honey should be treated before final casing up. Reconditioning of a large amount of honey can be done in a few hours. When honey is sealed in cans tops should be laid on the opening and not screwed on until foam has disappeared.

The Best Method

If honey is only slightly sour it can usually be cured by leaving it in the large tank during the time between extractings. If not long enough tanks are available for a large extracting, lay aside the top layer of honey in the vat or allow it to remain until next extracting. You have often noticed, probably, that only a few cases in a lot will become sour. This is usually the top layer of thinner honey that ferments because of its thinness. If the casing of this thin layer can be delayed for a long time, until it evaporates, sourness will not usually develop.

Some Honey Naturally Sour

However, I have been told of in-

stances when only heating will cure the sour condition. Even then the honey will not recover its flavor, but will taste sharp. Since the raising of cotton this has been prevalent, because the ferment or germ seems to develop in the nectar before it is gathered. Cotton honey is really a honeydew, since it is not gathered from the blossom but from the pores on the main ribs of the leaf and around the squares. During heavy flows in a damp season sour honey develops very frequently. Even before cotton came, alfalfa honey became sour because of green extracting and the condition explained above, and I have been told of sour mesquite honey.

On the whole, the writer believes that green extracting is the cause of most of our trouble, and by settling long enough and delaying the canning of the top layer until the next extracting most of the sour honey can be avoided.

Sour Honey Affects Market

So much sour honey has been shipped in the past, and so much trouble has been caused by it, that buyers are becoming very suspicious of our honey. However, the writer has been careful this year and we have had only one complaint and that one was of doubtful merit because the cans were not really swelled.

This has been written as a plea to all growers to be extremely careful, especially after heavy flows of honey, and take no chances.

Sour honey that becomes so in our warehouse can be reconditioned there at actual labor cost.

Arizona.

(Sour honey may be blamed for a great deal of prejudice concerning honey; yet it is not difficult to prevent its fermentation, if it is examined and caused to evaporate before it begins fermenting. But when we put our honey in cans or pails immediately after harvesting, we are unable to control it; or at least we cannot control it as readily.)

Honey may be rendered much better, when fermenting, by heating, but it is no longer good honey, because the best of the flavor is gone. We therefore need to emphasize the necessity of allowing honey to ripen thoroughly before extracting, and to place it in a very warm spot, till it thickens. Much honey ripens readily. But there are seasons when much of the honey harvested shows a tendency to ferment. This is usually noticed by the presence of a few inches of thin honey at the top of the tank in which it is kept. We cannot be too careful in caring for our honey, to prevent any defect of this kind. As the late Mr. Bingham wrote: sour honey is very much like jars of preserves that have been permitted to ferment. The preserves must be thrown away; the honey may be fed to the bees in spring, for brood-rearing. A little care in the management of the extracting part of our work will save us considerable trouble and loss.—Editor.)

The Unspoiled Delights of Honey

Simple Uses of Honey Count Most

By Malitta D. Fischer.

IT is not the price that is holding down the consumption of honey, for American people buy what they want—not because it is cheap or expensive, but because it is something they have been made to feel they should have. They want it—that settles it; they usually find a way to get what they want. I base this statement on the facts brought out by Walter Dill Scott, who has spent many years of research in trying to determine whether people buy through knowledge of a certain thing or whether they buy through emotion. His conclusion was that 90 per cent of the people buy through emotion.

If this is true, the trouble with the honey market is in our not being able to make people want honey. Why? We have too few ATTRACTIVE USES.

What is the logical thing to advertise or talk about on any food? Its uses, of course. Just what have we been advertising in honey? Our uses seem to have been limited to honey on waffles, hot cakes, hot biscuits, and bakery. Experience has demonstrated that most people prefer maple syrup six days out of the week on their waffles and hot cakes, and honey on the seventh. Honey on hot biscuits is universal—practically 80 per cent of those who can eat honey enjoy it on hot biscuits.

In addition to these simple uses, we find honey has been advocated in baking. This is not so good; first, it takes too long and, second, entirely too few people know enough about honey and its food value to even use it in the natural state, let alone as an ingredient in baking. We CANNOT, therefore, advantageously or quickly increase the consumption of honey by advocating its use in baking.

In the beginning, you cannot appeal to the busy housewife today by giving her the hard thing to do. There is a reason for this. She has too many things to do to trouble with difficult honey-baking recipes. But give her the easy thing to do and show her how that which is easy can give her a most remarkable result, then she will welcome honey as a part of her daily menu.

For example, what are most of our national food advertisers doing? Stressing a great variety of uses for their product. Cream of Wheat is a good example—an energy food—so is Honey. Cream of Wheat used to be a breakfast food, now it is a dessert. Look up a Crisco ad—such a variety of uses—from Crisco in soup to Crisco candy. Why? There is a reason always. The housewife or cook really desires an article of food



Miss Fischer is a beekeeper by choice, and an influential advocate of honey as a food. This article, written at our request, after hearing her talk on the subject at the January League meeting, gives, in a splendid way, her ideas on popularizing the uses of honey. They strike a brand new note which is basically correct.

Miss Fischer is a practical preacher, too. In her "Honey Tea Room" at Madison, Wisconsin, she demonstrates that an eating public, afflicted with hunger three times a day, voluntarily consumes large amounts of the delectable sweet. We hope later to have a story of this unique place.

that has a great variety of simple uses.

More Simple Uses for Honey. That brings us to the advocating of honey just as it comes from the bees. That is the easiest way and perhaps the best, since it has been said that Vitamin B is destroyed when honey is heated beyond a certain temperature.

There are many ways to use honey and it is superior in producing savory food. Can you think of anything more attractive than the flavor of flowers in your food. Honey can be used on steaks, halibut, chops, soups, puddings, pies, ice cream sundae preparations, and SALADS, without

much trouble. Giving the housewife an easy way to use honey and making her want to use it so badly that she cannot do otherwise, that desire not coming first from the knowledge of the health value of honey, but because the result she will get will be peculiarly attractive and satisfying. I honestly believe, beekeepers, there is our solution. Do this first, then let's bring along our health facts to strengthen our campaign.

SALADS—such an important part of our menu today. Fruit salads are among the most popular. How thrilling it would be for the hostess to seat her guests at a dinner party and surprise them with a salad that was not only unusually good to look at but distinctive in flavor, yet satisfying. Such a salad might well be a HONEY banana and nut salad. The hostess would say with a twinkle of satisfaction in her eye, "That sparkling gold center you see in the banana is a river of honey—just a tiny one, isn't it?" One of the guests might remark, "How a bit of honey can improve the insipid flavor of a banana!" That remark has actually been made of honey banana and nut salads served in our tea room. And a honey banana and nut salad is so easy to make.

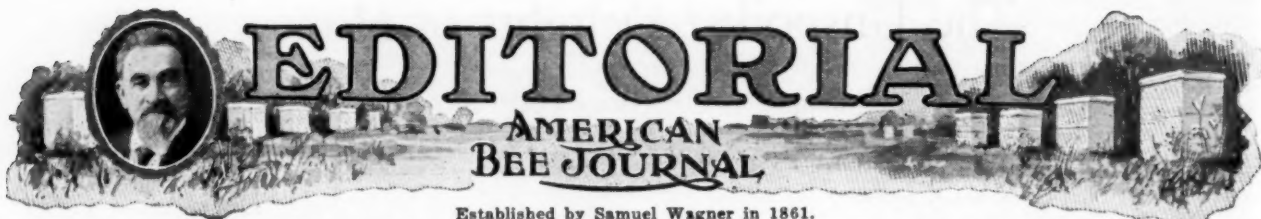
Let us name the essentials of marketing for a minute that we have been stressing: Uniform prices, standard containers, recognition of trade channels, making that recognition apparent in our business practices.

These are all necessary, but again I will say that our solution is not in following out these practices alone. We must advocate MORE simple and attractive uses for honey. I believe it was Mr. Kenneth Hawkins who said, "A pail of honey is not sold until it is used." So many five-pound pails of honey are purchased and allowed to remain on the pantry shelf simply because they granulate. If that purchaser had been given uses for honey in everything from soup to ice cream sundaes, honey specialties for every kind of party—breakfast, luncheon, afternoon tea, holiday menus, picnic lunches—all easy uses of honey especially applicable to her needs—would THAT FIVE-POUND PAIL OF HONEY HAVE EVER GRANULATED?

You'll be delighted to know how many things are made more delectable by HONEY when you know HOW to use it, and how many are made more healthful, without your ever detecting it in the taste.

And as Macbeth might say, may good digestion wait on appetite!

THE FLAVOR OF FLOWERS IN YOUR FOOD!



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Shipping Bees To Canada

We have received, too late for insertion in our June issue, a letter of warning, from the Dominion Apiarist, C. B. Gooderham, to the shippers of bees from the United States to Canada. It appears that a great many forget the regulations required in shipping bees to Canada, with the result that those bees are held at the frontier.

Many people are opposed to custom houses and regulations between countries, for what is called protection. But no one can object to the prevention of importation of diseases from one country to another or from one state to another. It is to the interest of all. Canada has had cause to complain of the shipping of disease in colonies or nuclei on combs. But, as Mr. Gooderham states, just as good results are obtained from combless packages, with greater safety.

It is very important that the southern breeders and all beekeepers sending bees from one country to another or from one state to another, should send with the bees a declaration signed by the shipper himself that the food supplied with the combless package is free from disease. When this is not done the packages of bees are held by the Customs, and the delay often results in considerable loss. Every shipper of bees into Canada should attach the necessary declaration, properly signed by himself, before the bees are sent out. The following is a copy of the Act:

"Under and by virtue of the authority conferred upon me by the provisions of the Order-in-Council of November 30th, 1909, containing regulations relating to Animals Quarantine, issued under authority of the Animals Contagious Diseases Act, Chap. 75, R. S. C. 1906, I the undersigned, Joseph Hiram Grisdale, do hereby order that:

"To prevent the further introduction of American foul-brood and other diseases which affect the brood of bees, the importation into Canada of bees on combs or used or second-hand hives and bee supplies is prohibited.

"The importation of bees in combless packages is also prohibited unless such packages are accompanied by a declaration signed by the shipper that the food supplied to the bees and carried in the package is free from disease."

Nothing To Do?

I was away a little over two weeks in May. On my return I found 23 foreign publications on bees on my desk, waiting for me to read them. If they were all in French or in English, it would be a short job; but they are in a number of languages, in some of which I can only fairly read the titles and general trend of the articles. It is quite a job to classify them.

Upon investigation I find that we are exchanging with some 50 odd bee periodicals. Beekeeping is surely spreading through the world. And still there are many people who never get to taste of honey, and at the same time much honey is going to waste in the flowers, the world over. Yes, there is still something to do in beekeeping.

Educate the Consumer

The greatest difficulty which now confronts the honey producer is not securing a good crop, but selling it after it is secured.

The average consumer does not know much about honey and is likely to establish a standard, in his mind, which does not at all represent the description of honey. If he has had yellow honey of strong flavor, he is likely to distrust all light-colored, mild honeys, such as clover, basswood, sweet clover, etc.

If, on the other hand, he has had light colored honey, he wonders at the strong flavor of the darker grades.

The honey producer needs to carry on a constant campaign of education, if he expects to sell his crop at paying prices. There is no limit to the sale of honey, if the customer is sure that it is real honey. But, if he is used to one kind, or to liquid honey when we offer him granulated honey he must be informed as to the facts.

Some people think it is too much trouble to carry on a campaign of education. But it pays, and we have often proved it by our own success in selling honey. We have always sold our crops readily and often had to buy more to supply the demand, while some producers with only a few hundred pounds imagined that the production of honey was overdone. As there is honey wasting in the fields, it behooves the human race to try to save it. When every human being can get honey to eat, then, and not till then, will beekeeping attain its proper limit.

Speed of Wing Motion

The Magazine "France Apicole" gave a statement of a scientist, Marey, on the speed of the wings of insects in flight. This is reproduced in the Canadian "L'Abeille." Marey made experiments long ago, on the flight of bees and other insects. He found 330 strokes of the wings in the house fly, 190 in the honeybee, 110 in the wasp and 9 only in the butterfly. But these statements do not give us all the facts, for there is great difference between the number of strokes in the wings of a field bee and those of a robber bee or of an angry bee. We can notice it easily by the difference in buzzing and the quickness of action. The more rapid the vibrations, the higher the pitch. Landois, a German, in 1867, gave 440 vibrations as produced by honeybees. He evidently did not use the same method in his experiment as did Marey. Cheshire gives some very interesting observations upon the assertions of these men, in his "Bees and Beekeeping." So does Cowan in "The Honey Bee." Our own scientist, Phillips, says very properly that "the maximum rate of flight is not clearly established, for the currents of air must be eliminated in making such determinations."

It would be interesting to make experiments on the maximum and minimum of the speed of the honeybee's wings. This might be carried on at the same time as the experiments now being made by our national experimenters upon the distance that bees will fly.

Robbers When the Crop Stops

Look out for robbers when there is a stop in the crop. When the weather is hot, many of us stagger the stories, to give more facility of ventilation to the bees. If the hives are left in that condition when the honey crop stops, the bees will remove the honey from a large space near these openings. Better do away with that staggering of supers as soon as the crop is over. Nothing is more demoralizing in an apiary than robbing, especially if there is any suspicion of disease.

The Spray Problem

More and more reports of the loss of bees from spray poison are coming in. R. B. Willson, in "Beekeeping News of New York State" has the following to say on this subject in his June issue:

"The situation relative to the poisoning of bees grows worse. Beekeepers in the fruit sections of western New York have sustained heavy losses again this year. Dust instead of liquid spray is being used by some growers in Onondaga County and ruinous losses are reported by some beekeepers in that hitherto excellent region for beekeeping."

One after another of the orchard districts have largely been abandoned by the beekeepers for the same reason. Similar reports come from the apple-growing valleys in Washington, Colorado and New Mexico. The control of orchard pests is becoming a more serious problem every year and many orchardists are finding the cost of the continuous spraying to be too heavy for the returns from the orchard and many orchards have been cut down to be replaced by other crops in western states.

Unless some way can be found to protect the bees it will be impossible for commercial honey producers to remain in the orchard districts. It remains to be seen whether the fruit growers can secure sufficient pollination to insure a profitable crop of fruit after the bees have been removed. This problem ought to be of mutual interest and a solution should be sought which would serve the joint interests of fruit grower and beekeeper.

Animals

This is the title of a British magazine which has been coming to our desk regularly and is very interesting. "Animals" does not appear to consider the bees as insignificant enough to ignore them and the "Bee Department" contains progressive information. In its June number it quotes the Oetli motto, which Mr. Langstroth placed at the end of his book and which we preserved in all the editions: Keep your colonies strong. . . .

It discusses the advisability of legislation concerning bees, which is approved by a part of the British beekeeping public and fought by another part of the same public. The only trouble is in the question of employing experts, as inspectors, who sometimes are anything but experts. This may be overcome in time and it is our main trouble in this country where, from the opinion of many people, too many laws are passed.

The bee editor of "Animals" is in favor of large hives and recommends two stories of the brood chamber of the official W. B. C., a small hive which is "used by 90 per cent" of the British beekeepers. He takes note of the selling of California honey, in sections, in a large store of London, at 2s 5d., which means about 50 cents per section.

Cattle, sheep, dogs, pigs, cats, poultry, rabbits, birds of all kinds, etc., find place in the columns of this interesting magazine.

Flight Activities of the Honeybee

Here is a Department Bulletin, No. 1328, which has developed some objections on the part of those who have read extracts from it. Yet it is very conservative and the author of the studies which it reports has been very cautious in his statements and has plainly suggested that these matters must be further investigated, for he writes that "it seems best to record the data so far obtained, that they may serve as at least an introduction to a further study of this phase of bee behavior."

The experimenter, Dr. A. E. Lundie, of South Africa, spent the best part of a year in the United States. He crossed the country with his family, in an auto, calling upon many leading beekeepers. He stopped at Hamilton a couple of days and we could ascertain that he is a true lover of nature and a student. But the experiments which he performed at the Experiment Apiary at Somerset, Md., were difficult ones, for he was the inventor of a device which would register the passage of each field worker, in or out. The reading of this 38-page Bulletin is a task, if we wish to master all that it says. There

is an immense amount of facts. But it is easy to perceive that there are great difficulties in the way of accurate results. One whole chapter of this Bulletin is employed to indicate the possible errors in the count and the factors influencing the flight of bees.

When one knows, as most practical beekeepers do, how many possibilities may occur in the recording of the work of a colony of bees, he can appreciate the work begun with this experiment. The statement that a bee only makes a little less than 32 trips, on the average, before death overtakes it, looks to us as underrated. But one statement made may be confirmed by previous tests. It is the assertion that the average honey load of a bee entering the hive on a good harvest day was found to be 25.3 milligrams. If one bee carries 25.3 milligrams, 10,000 bees would carry 253 grams; 20,000 bees would carry 506 grams, or practically 1.1 pounds. Now Professor B. F. Keens, of Storrs' Agricultural College, in his experiments, reported in the A-B-C, showed that it takes about 20,000 bees to carry a pound of honey. This tallies with the experiment reported above.

Since there is so much that we must unlearn, after learning it, we must not take too much for granted; but it is a matter of congratulation to see the ingenious ways here devised to get at facts. Sooner or later, with continued experiments, we will find out many things still unknown. The great trouble is that when anything unexpected happens, the newspapers engross up it and keenly try to make a sensational statement out of it. Hence the reports, published lately, that the busy little bee is not busy but lazy. We know better.

Tarsonemus Woodi. (Isle of Wight Disease)

In a report by the secretary of the Flintshire Beekeepers' Association, Mr. H. L. Jones, published page 211, May 28, of the British Bee Journal, the assertion is made "that there is no known cure and that no bees are immune; once a bee is attacked by *Acarapis woodi* that bee succumbs to the disease."

On the other hand we have seen several statements of beekeepers from the European continent stating that the acarus is found in healthy colonies. This confirms our impression that the Isle of Wight disease is especially dangerous in the moist climate of the British Isles and mostly insignificant in many other localities. Let us hear more about it.

Appearance of Queens

In our June editorial, we mentioned Mr. Crane's statement that "we find sometimes our most prolific queens small of abdomen and of inferior appearance." We find this confirmed by a writer in the Bulletin of the Society d'Apiculture de la Gironde, under the title "Variable Color of Italian Queens." The party in question, R. Cosnard, writes that in a shipment of 10 queens received from Italy, one was almost as black as a black queen, but her bees were all three-banded. He thinks the dark color may be due to her hatching in unfavorable weather. We have much to learn yet.

To Be Or Not To Be

In this number, the reader will find the resolutions passed by the League on Federal aid and the article by Jes Dalton on that subject, as well as on "Bonding the Breeders." What the beekeepers want is fair play and safety. Let there be no ill-feeling or unpleasant words. We believe convincing arguments may be given without heat.

States Barring Bees On Combs

The item under the above heading, in our June number, page 283, is complained of by a reader, as incorrect. We believe that it is not explicit enough, but it is easy to correct it. This will be done in our next number. The item was borrowed from a source which should be correct.



Apiary of J. W. Powell, of Mesilla Park New Mexico.

Keeping Bees In New Mexico

Conditions Under Which Honey Is Produced In the Arid Southwest

By Frank C. Pellett.

NEW MEXICO, our fourth largest state, is one of the smallest in population. The census of 1920 shows but slightly more than 360,000 people in its entire area. This state, which is more than twice the size of Iowa or twelve times the size of Vermont, has within its boundaries less than one-third the number of people who live in a single city like Detroit, Los Angeles or Philadelphia. Room is the one thing which New Mexico has in plenty. Coming into New Mexico from the well settled east, one is struck with its immense areas of unoccupied territory. After riding over its plains and mountains one comes to envy the "cowpuncher" who owns all out of doors with a fence around it.

Water is the limiting factor to the agriculture of New Mexico. On the plains east of the Pecos River the annual rainfall is 14 to 20 inches, and in favorable seasons is sufficient to produce grain crops under dry-farming methods. There is much of the state, however, where the annual precipitation averages less than 10 inches and which without irrigation must always remain a grazing country. In the higher elevations, in the mountains, there is more rainfall, and large forests occur there. Aside from the small areas which are irrigated in the narrow valleys there is but little beekeeping in New Mexico. There are some locations in the mountains which offer interesting possibilities, but these have not been developed to any great extent.

New Mexico is a high and dry state—a state of mountain, plateau and plain. Owing to the generally high altitude there is a marked variation between day and night tempera-

tures. The altitude ranges from something like 4000 feet on the plains to 10,000 feet or higher in the moun-



Thos. L. Gunter, most extensive beekeeper in New Mexico.

tains. The crest of the Sangre de Cristo Range in the northeastern part of the state rises to a height of 13,000 feet.

The elevation, combined with the

lack of moisture, produces a climatic condition of marked extremes. The atmosphere is thin and extremely dry, hence when the sun shines the surface is quickly warmed and in summer gets extremely hot. The same conditions favor rapid radiation of the heat when the sun goes down and the cooling effect is equally rapid.

Few of the plants common to the humid regions will stand these extremes and we accordingly find a flora which is strange to the man from the east. In the irrigated valleys where moisture conditions can be controlled we find familiar crops, such as alfalfa, sweet clover and cotton, in marked contrast to the yuccas and creosote bush, which are the most characteristic native plants.

The greater part of New Mexico is one vast grazing region, devoted to pasturing cattle and sheep. Due to the scattered vegetation and the limited precipitation, large acreage is necessary for every animal pastured.

The Rio Grande and the Pecos Valleys are fertile and well watered by irrigation, and here it is that most of the beekeepers of the state are found. A few of the smaller valleys offer limited pasturage, but the number of extensive honey producers outside these two valleys is small. With the first settlement, alfalfa became an important field crop and sweet clover became scattered along the ditches and margins of the fields and for a few years New Mexico was unexcelled as a beekeeping state. The climatic conditions are ideal for large yields of fine quality honey, and as long as alfalfa was grown in sufficient acreage the beekeeper found conditions in his favor. Of late there

has been a great change in local conditions which has presented new problems for the beekeepers. Cotton has replaced alfalfa as a field crop over a large portion of both valleys and cotton is much less dependable as a source of honey than alfalfa. Since most of the region had been pretty fully stocked with bees, the new conditions leave many locations short of sufficient pasture for the number formerly kept. Some beekeepers have moved to other locations, while others have reduced the number of colonies to meet the new conditions.

In the Pecos Valley an even more serious condition has developed. The Pecos Valley is an important commercial orchard district and the increase of the codling moth in the orchards has made it necessary for fruit growers to constantly increase the number of applications of poison until spraying has come to be an almost continuous process during the growing season. Formerly the only complaint concerning loss of bees from poison was when spraying was done when trees were in bloom. Now loss is likely to occur at almost any time during the growing season. Apparently more bees are lost from the



J. W. Powell, of Mesilla Park.

to be about the only way out for him. A few beekeepers in that vi-

In the lower Rio Grande Valley, not far from El Paso, Texas, there has been some loss of bees from cotton spray. Last season Poe & Walker, of Las Cruces, lost 400 colonies from poisoning where a large area of cotton was sprayed with a molasses spray for the cotton boll worm.

This new misfortune has greatly discouraged some of the beekeepers in that valley. However, it is reported that the spray proved a failure for the purpose for which it was intended and that it will probably not be repeated in that immediate neighborhood at once. Prof. Paul M. Gilmer, of the college of agriculture, has become interested in the beekeepers' problem and proposes to take up some special work in an effort to find means of controlling the insect pests without destroying the bees. In the case of the cotton spray, the trouble in this particular case seems to have come through the use of syrup to stick the poison to the leaves. The bees, attracted by the sweet liquid, were killed by the poison which it contained. Professor Gilmer thinks it will not be difficult to find something to serve this pur-



H. S. Robinson (right) and J. C. Smith, of Albuquerque.



W. R. Atkinson (left) of Artesia and Ernest Nelson, of Roswell.

poison that falls on the cover crop than are killed directly on the blossoms of the trees. In some cases the bees seem to get poisoned when in search of water. At Roswell, which was formerly the most important beekeeping center, less than half of the former number of bees still remain. The writer met several men at various points in Texas and Arizona who had left this place because of losses from spray poison. J. W. Basham, now of Barstow, Texas, stated that the Roswell area was formerly the finest beekeeping region which he had ever seen, and that it still would be so, in his opinion, except for the danger from poison. Ernest Nelson, who is one of the largest beekeepers still remaining at Roswell, manages to escape most of the loss by securing permission to cut the cover crop, in the orchards to be sprayed within reach of his bees, at his own expense. This is a large undertaking in a section where there are such extensive areas, and involves much expense, but it seems

cinity have been able to place their apiaries far enough from the orchards to escape serious damage and still harvest good crops of honey.



R. B. Slease and N. M. Cunningham, Extensive beekeepers at Carlsbad.

pose which is not attractive to the bees. There is also some hope of finding something which will serve as a repellent for the bees without reducing the efficiency of the spray. Since Colorado is confronted with a similar problem in the case of fruit, it is hoped that a satisfactory remedy may shortly be found and thus prevent the destruction of the beekeeping industry in the fruit-growing districts where codling moth is a serious pest.

J. W. Powell, of Mesilla Park, has about 800 colonies in the Rio Grande Valley. About one-fourth of his crop comes from the desert flora and the balance from cultivated crops in the valley. He produces about half bulk comb honey in common with many other large producers in the West. Alfalfa is the principal source of his crop, with sweet clover of much less importance. Cantaloups furnish something, also. With cotton displacing alfalfa to a large extent, he finds it necessary to extend his operations over a larger territory in

order to insure his average of seventy pounds per colony, which he has maintained for the past nine years. Powell has a few bees at an altitude of 9000 feet in the mountains as an experiment. They seem inclined to swarm excessively, but the amount of honey stored indicates that the mountain locations are worthy of further trial. There is an abundance of cleome, or Rocky Mountain bee plant, in the higher elevations, in addition to numerous other sources not common to the lower valleys.

I was much struck with the fact that most of the larger producers of New Mexico have given up the production of comb honey in sections, for bulk comb honey. Most of the large producers run for bulk and extracted honey in about equal quantities. The comb is cut into squares the right size to fit readily into the five and ten-pound tin pails and extracted honey is poured into the container to fill it to the required weight. Most of the honey is sold to ranchers and farmers in Texas and Oklahoma, being hauled across country in trucks.

Further up the Rio Grand Valley, Thomas L. Gunter, of Belen, is situated where the valley is much narrower, and he reports sweet clover and alfalfa as of about equal importance, with some surplus from wild sunflowers and other fall flowers. Gunter has bees all the way from near Albuquerque south to Socorro. An interesting thing comes to light in connection with the color of the alfalfa honey from his different yards. At Belen alfalfa honey is always light in color, as is usually the case in northern mountain locations. At Socorro, only fifty miles farther south and at slightly lower elevation, alfalfa honey is noticeably darker in color. The reason why alfalfa honey at the lower altitudes should be so much darker and poorer in quality is hard to understand.

Gunter is probably the most extensive honey producer in the state of New Mexico, owning 1100 colonies exclusively and being a partner in 1200 more. His average crop the past few years has been about 135,000 pounds. The dry weather has cut short the flow from alfalfa in mid-summer due to shortage of irrigation water. In a normal season he expects 250,000 pounds. He puts up about 80 per cent of his crop as bulk comb honey and hires his own salesman to canvass the Texas and Oklahoma markets. He is able to net about 15 cents per pound above expenses of selling by this means, and finds his greatest difficulty in getting enough honey to supply his constantly increasing trade, rather than in finding a market.

At Albuquerque, the valley is quite narrow and available pasture curtailed by the encroaching hills on either side. There I spent a pleasant day in company with H. S. Robinson and J. C. Smith, who have extensive apiaries in that region. Apparently their average yields are not much different from those farther south, where the valley is wider, but the number of hives in a yard seems smaller. Albuquerque is far enough

north that cleome is within reach of the bees pastured in the valley.

New Mexico beekeepers report that their chief difficulty is to get the bees to build up properly in spring. Climatic extremes are unfavorable to spring brood rearing and it is evident that some extra protection would be valuable at this season.

Due to the mild temperatures that prevail in the middle of the day during much of the winter, the bees have ample opportunity for frequent flight and usually come through to the beginning of brood rearing with little loss.

The writer has found complaint of the alfalfa butterfly throughout all the alfalfa growing districts of the irrigated west. The yellow butterfly, which is about the size and appearance of the common cabbage butterfly, except that it is yellow instead of white, is becoming a somewhat serious pest in the entire region. This *Colias* at times becomes so abundant as to reduce the nectar available for the bees. The larva feeds upon the leaves of the plant, while the adult form sucks the nectar from the flowers.

At Artesia, W. R. Atkinson reports considerable surplus from salt cedar, or Tamarix, which has escaped from cultivation and run wild in the Pecos River bottoms. This small tree is commonly cultivated for ornamental purposes through the irrigated southwest and at this point it apparently finds natural conditions exactly suited to its needs. It seems to be increasing in importance throughout the entire state.

At Carlsbad, which is lower down in the Pecos Valley than Roswell, fruit growing is of less importance and spraying is consequently less a menace to the beekeepers. It is a little far south for sweet clover to do its best, but both N. M. Cunningham and R. B. Slease report considerable surplus from mesquite, in addition to the main crop from alfalfa.

There is a wide variety of sources of nectar common to New Mexico, in addition to the few mentioned, which space will not permit me to discuss fully here. A later article will be devoted to them.

New Mexico is a good beekeeping state and has many attractions as a place to live. Perhaps more space than necessary has been given to its drawbacks, which are probably temporary in nature. My reason for this lies in the fact that most of the localities visited appear to be quite fully stocked with bees already and I would dislike to cause anyone disappointment by leading him to seek a location where a favorable opening is not easily found. Those who are attracted to New Mexico will find the best opportunities by buying a location from someone already on the ground. When the change in the agriculture of a region compels a readjustment of the position of bee men already established, it is a poor time for a stranger to bring in more bees from a distance. It is quite probable that the present tendency toward the planting of cotton will not last. The return of the low

prices for cotton which have prevailed on many occasions will result in an immediate increase in the acreage of alfalfa, which will be much to the advantage of the bee men. The loss of bees from spray poison offers a serious problem for the present, but a remedy must be found, since the prosperity of the fruit grower, as well as that of the honey producer, depends to some extent upon the bees.

New Mexico has a healthful climate and a large part of its population has been attracted there for reasons of health. It is a state with immense undeveloped resources and has a future of wonderful opportunities to those who are prepared to take advantage of them.

Paradichlorobenzene for Beemoths

By George H. Vansell.

Paradichlorobenzene has been found to be a good, cheap killer for the larvæ, pupæ, and adults of the waxmoths, *Galleria mellonella* and *Achroia griseella*, which are destroyers of thousands of valuable bee combs. Fumigation experiments were conducted at the University of California farm (branch college of agriculture, Davis,) which show that this material is preferable to other fumigants. It is neither inflammable nor corrosive and is very effective as a killer.

Lots of thirty combs in ten-frame super bodies were used in ascertaining the efficiency of paradichlorobenzene. The supers were stacked on the floor over a piece of oilcloth, with a double strip of muslin around the edges between all supers, and were covered with a piece of oilcloth and hive cover. Two tablespoonfuls of the crystals were exposed in a shallow dish on top of the upper frames. At the end of four days all larvæ were apparently dead. After two weeks' time all eggs had hatched (which hatched at all) and these larvæ were all killed. Adults and pupæ were also killed by being confined in bell jars with a very small amount of paradichlorobenzene.

Only about half of the used crystals had vaporized at the conclusion of the fumigation. The great value of this method of fumigation to beekeepers is apparent at once. Combs, even those already infested with waxmoths, may be stored in any tight paradichlorobenzene compartment from one season to the next or through the year with absolute certainty that no moth injuries will occur.

The fumes coming from paradichlorobenzene are not repulsive to a man. This material is readily available and fairly cheap. After the combs are aired, no odor can be detected and the bees work them readily. There is no danger of fire as with carbon disulfid, and the life of the fumigator is not in danger as it is when using HCN gas. In fact there is nothing apparent to prevent the use of this material from becoming as general among beekeepers as it has with the peach grower for controlling the peach tree borer.

Francis Jager, Minnesota's Beekeeping Philosopher

By Faythe Mendow.

PRIEST, bee-expert, farmer, experiment-work director, and college professor—these are the positions held by Francis Jager, chief of the bee culture division of the Minnesota Experiment Station at the University of Minnesota farm.

Not imposing, but most impressive, personality seems to radiate from him. His brown hair shows strands of silver here and there. His kindly face is lined with the marks of good-nature and a philosophic optimism. His youthful, smiling eyes seem to take you into their confidence and tell you to love the higher things of life. Modest and unassuming, it is with difficulty that Father Jager can be made to talk about himself.

The story of his life is filled with romance. Through it is woven the tale of his study of bees, his life-work. He graduated from St. Thomas college in Minnesota, a priest, but the spell of bees was still over him and he went back to them, becoming head of the bee culture work at the university. Every civilized country in the world furnished ground for his bee studies since he was six years old.

A mountain top in Jugoslavia was the birthplace of Francis Jager. He had to go five miles every day to school; from the heights of the mountain down, through the grass and trees of the ravine, formed like a great carpeted stairway. The great distance of his home from school made it necessary for him to bring his lunch, which, Father Jager says, was usually beans. The schoolmaster had several beehives, which were holes in the wall of the building. Little Francis was stationed outside of the schoolhouse, and whenever a swarm of bees came out of a hive he was instructed to call the schoolmaster. If he shouted loud enough, he got some meat and bread and butter from the teacher's wife.

"My teacher was a genius," said Father Jager. "He taught us to love Nature and to understand her, and it is due to him that I am a natural scientist today."

Father Jager believes that people can become almost entirely independent of money. His household expenses are \$7.00 a month. He has a ten-acre farm, beyond Mound, on Lake Minnetonka. On it is a five-room bungalow, placed in a setting of roses. To one side is a vegetable garden, where he raises "cabbages,

strawberries, and everything for the table." Beyond is an orchard, a little wheat and oat tract, a pasture with one cow, some chickens and pigs, and his beehives.

All that he has to buy is coffee and sugar, and sometimes he can trade his farm products for these commodities. He even bought a mill, so that he can grind his own wheat for whole wheat flour, and he has fine whole wheat bread from it, too.



Father Jager is single, but he is continually having visitors out to his home, and yet his table expenses are only \$7.00 a month.

"I should like to try the experiment of making my own clothes, too," he remarked. "I should like to learn to spin and weave and make my own cloth as they do in the villages in Europe, and also tan my own leather for moccasins. It is really very simple. When I was in Europe during the war, I saw the boys in the trenches tanning goat skins just for fun."

After revealing his extraordinary philosophy of life, Father Jager came back to the subject of bees. He has been at the University of Minnesota for eight years. He started with a desk and a chair, as he expressed it, and organized and built up the department of bee culture to its present

status. Besides the research work and the practical work with beekeepers of Minnesota, there is a year course offered in bee culture. One hundred students, sixty boys and forty girls, are taking the course. Each student has his own colony to care for.

"Most of the students never saw kings and queens before, so first of all I introduce them," said Father Jager. "Then I line up the students about 100 feet in front of the hives by the linden bushes, and demonstrate how to handle bees. The more courageous and curious come closer until they are right near me; some advance about 50 feet, and the rest may be seen cautiously peeping out from behind the linden bushes. The students wear broad-brimmed, dark blue or black sailor hats, with mosquito netting veils over their faces and necks, but they handle the bees with their bare hands. After about eight weeks, they think they are finished beekeepers, and on Sundays they bring their fathers and mothers, sisters and brothers, even sweethearts, to show them their hives."

The mouth and eyes are the usual places where the students are stung, according to the Chief, as the students call Father Jager. Bees go for hairy and furry things and bright colors, also quickly moving objects. The students blink their eyes and talk while they work, so the bees attack their mouths and eyes.

"Bees have dispositions just as you and I have, and you have to learn their moods just as you do with people. You have to learn by experience and mistakes, just as you learn when to ask papa for a new hat. I wouldn't know how to do that, but I do know when to approach bees because I have studied them for so many years."

The apiaries at the University of Minnesota supply all of the state of Minnesota with breeding queens. Last year about 700 were mailed to all parts of the state for the improvement of the bee stock in the state.

"There are enough kings and queens here to supply the whole world with rulers," jestingly remarked Father Jager.

One is carried away by his enthusiasm and is inspired by the depth of his appreciation of nature.

"I love nature, and I hate money," he asserted emphatically. "Nature is

alive, and I love live things. When I see a frog jumping along, I am interested in it because it is alive. But city people don't understand nature—they are interested only in the material. Why, money is the filthiest thing we have, and yet people love it. People take the dirty dollar

laden with germs and hold it tenderly. Wouldn't you rather go out and pick a beautiful rose and hug it to you?

"I make quite a lot of money, but at the end of the year I barely come out even. It goes to my friends all over the world."

League Adopts Interstate Disease Control

By S. B. Fracker, Madison, Wisconsin.

AT the convention of the American Honey Producers' League in Chicago the questions which had been brought up from time to time on the principles of federal co-operation in American foulbrood control were discussed. After considering the interests of the honey producers, breeders of bees, and others in all parts of the country, a set of principles was proposed by the bee disease committee and adopted. These principles are as follows:

1. The following facts should be given national recognition:

a. American foulbrood is one of the most important and serious factors in the cost of honey production.

b. The prosperity of the industry is a matter of national concern; and

c. Federal assistance of the states, in a plan to reduce or eliminate American foulbrood losses, is justified.

2. Field work on such a project must be carried on through state organizations at their request and consent and under state laws. The federal constitution is sufficiently definite to guarantee this provision.

3. The federal department must retain the right to determine the policy and plan under which federal funds can justifiably be employed.

4. The extent of territory or the number of states within which federal funds can be employed at the beginning will depend on the amount of the appropriation, and the determination of this question can best be left with the secretary of agriculture.

5. National legislation for preventing the interstate transportation of American foulbrood-infected material is needed, but such legislation must make possible the movement, under federal or state certification, of bees and used equipment from healthy apiaries and localities.

6. Research by the federal department and the state experiment stations on several problems is of pressing importance, such problems including improved methods of disinfection, the role of honey on the commercial market in the distribution of bee diseases, the relative importance of queen cage candy, broodless extracting frames, and other used equipment, in such distribution, and the degree to which local robbing and bees in bee trees and rock cavities present obstacles to the elimination of American foulbrood. Such research should be undertaken

at the earliest possible moment and should be continued throughout at least early stages of the federal control campaign.

7. Bee disease control work must not be permitted to disorganize the work of the bee culture laboratory, the investigational work of which should continue unhampered by extensive administrative activities.

Letters have been published in the American Bee Journal, as well as in other beekeeping periodicals, pointing out some of the difficulties in the way of federal co-operation and questioning the position of the League in regard to them. Most of these points are covered in the principles given above.

It will be noted in particular that there is no tendency to force on any state any action which its citizens do not desire. Under the federal constitution no apiary inspection work could be done without the state's consent. In fact, federal inspectors of any kind cannot enter onto private property within the states without a state law authorizing them to do so. The League is asking that federal funds may be made available in order that the plans of inspection and the results of control work may be more uniform and efficient throughout the entire country. Inspection work in any state will have to be based on state laws and be done entirely upon the state's request and with their consent. The federal department under no circumstances can take control of any funds appropriated by a state, nor can they carry on any work, even under federal funds, except under state laws.

A second point of general interest is that the League is coming out definitely in favor of the establishment of certificates for the movement of bees and used bee supplies. In view of the quarantines which have been placed by some of the states, prohibiting the movement of bees on combs, this item is of particular interest. It was felt that while individual states or parts of states might perhaps be justified in protecting themselves by embargoes and quarantine measures, such measures cannot be authorized in a federal law on the subject. In the Rocky Mountain states, apiaries are moved from county to county and state to state, during the season, in order to take advantage of the honeyflow from different plants. In the south, nuclei constitute an important means of shipping bees north for the honeyflow. In New England, bees for pur-

poses of pollinating plants must be moved from one state to another, as some sections where they are needed for plants cannot well support them the year around.

The League was therefore unanimous in recommending that any federal law on the subject must provide through certification for the moving of bees (both in packages and on combs) and used bee supplies from healthy apiaries and healthy districts to other points in the United States.

Another feature of the principles given above is that which provides for experimental work. There has been a gradual cutting down of the appropriation to the Bee Culture Laboratory, since the war, until now the laboratory is severely hampered in its activities. If it undertakes extensive problems on the methods by which bee diseases are now being distributed and the improving of the control and eradication methods, it will have to receive more adequate support. This it cannot secure from Congress unaided; the beekeepers' backing is essential, and we all are highly favorable to the continuation of this work.

A number of communications have appeared from time to time regarding the distribution of disease in honey shipments. Several states are apparently successfully preventing the sale of honey from infected colonies. As honey loses its identity, and its power of infectiveness cannot well be determined after it leaves the home apiary, the League has not been favoring any federal measure which would attempt to hamper honey movements. On the other hand, it has not taken any action opposing the regulations of those states which prevent the sale of honey from infected yards. If this phase of the problem is to be solved at all it is believed it will have to be done by controlling the disposal of the honey at the time the disease is found, and not by placing impracticable limitations on the sale of honey as human food.

Federal co-operation in bee disease control is in many ways one of the most important proposals which have ever been made with respect to the beekeeping industry. It involves recognition by Congress of the importance of beekeeping and of the danger of permitting the industry to become weakened through disease. The gradual elimination of beekeeping in this country through the continued spread of American foulbrood, which after introduction always makes honey production more and more unprofitable, would be a disaster not only to beekeepers but to many lines of horticulture, for bees are the most active and reliable pollinizers of fruit and other field crops. Congressional recognition of this fact and of the national importance of bee diseases means placing beekeeping on a higher plane than it has ever been before.

The success of this legislation, including federal financial support, would be a Godsend both to the honey producers and the breeders of bees. To the former it means the

maintenance of healthy apiaries and the consistent production of profitable crops of honey. To the latter it means the establishment of authoritative inspection certificates issued under federal and state regulations and meeting general recognition, as a substitute for the present plan of a wide variety of conflicting state regulations.

Even if a federal co-operative campaign should not result in the total

elimination of American foulbrood in the future, just as vaccination has failed to eliminate the last traces of smallpox and some malaria continues in spite of mosquito control, nevertheless American foulbrood can be expected to be reduced to a point where it is no longer a factor in commercial honey production and where it is entirely absent from hundreds of counties and many entire states.

is introduced through diseased honey which is shipped in." Mr. Carr also gives some good, old-fashioned advice about the Golden Rule—treating others as you would have them treat you. Disease eradication, like charity, begins at home.

I wonder if Wyoming disposes of all its diseased honey locally or if some of it is exported and comes south through our disease-free territory? If the American Honey Producers' League actually wishes to stop the spread of disease, why does it not look into this angle of the question?

Last summer the only complaint we had of disease going out of Louisiana was to a state whose officials were prominent in pushing national disease control. We traced it to where it left from an apiary in Louisiana that had never been infected nor had any disease near it, and none when examined after the complaint was made. This case was reported, in an endeavor to locate the infection, and it was found that the disease was on three farms adjoining the northern customer. Last season we shipped bees to Michigan under special permit from the state inspector, who is also an officer of the League. We further perfected our old inspection system to make doubly sure and did not have one complaint. But this season, up to the present, we suddenly find that no permits can be issued for shipping into this same territory. How can this be explained in any satisfactory way?

I personally fail absolutely to see where Texas, Louisiana or Mississippi has anything to gain by Federal legislation in bee disease control. We have cleaned up our states at our own expense. Why should we help someone else under a guise of Federal aid? Is this not the same identical thing as our pensioning the northern veterans through federal aid? Do we wish any more of that? In the latter case, of course, there is the excuse of not assisting those who attempted to overturn the Government, but this does not apply to the matter of bee disease, which we have cleaned up at our own expense.

Before we join in any plan to clean up the unclean states, we positively must know where we stand in this matter of honoring our own inspection certificates. The judgment of the League on this question, up to the present, has not been at all along lines to inspire confidence.

Suppose it were possible to clear up this matter, what indicates that it is time to bar the movement of bees on combs in interstate commerce? Do any two authorities agree on what we will substitute? Take up any publication and look over it at random. The cage that will not safely ship bees is agreed upon, but who agrees on the cage that will ship bees? One has lost heavily with candy feed and another has lost heavily when the syrup feeders became clogged and they starved, and another lost heavily because they ran out of food entirely, etc.

The editor of the American Bee Journal saw a cage he commented

Ideas On Bonding and Disease Laws

By Jes Dalton.

TIME and again I have stated that I was not personally interested in the bonding scheme of the American Honey Producers' League. Bonding is largely an economic question. As long as we have people who will hunt up the cheapest materials on the market and then drive a price-cutting bargain to boot, just so long will we have people selling bees in an attempt to meet this class of buyers. Opposed to this is the advertising agency demanding that the breeders guarantee satisfaction. As long as these conditions exist we will have a reason for and a cry for "bonding" or some similar plan.

For my own part, I candidly never took enough interest in this bonding scheme to know really what it was until some of the southern breeders began to write me, protesting against it. At a glance, it looks like an unwieldy contraption to adjust differences in transactions. I have had lots of experience trying to place blame and secure justice, and I smiled to myself over how sweet a job someone would have, but I supposed, of course, from its name, that a bonding company stood between the breeder and the fellow he had agreed to satisfy. Frankly, I did not look for a thinly disguised joint note, collectable to the tune of \$20, on every thousand signed up to, and every fellow responsible for every other one, and with three of the deciding votes to be held by the buying side.

I corresponded with the first breeder who protested to me and asked him if he really was sure of what he had written. I referred him to the fact that all the journals practically had endorsed it. Even yet, I do not see why I should tear my hair out over it. If one wishes to sign a joint note, why deny him the questionable privilege? People do it every day. However, we should see that the southern breeder knows just what he is doing when he signs. He should not sign, thinking, as many of them did at first, that he was signing an agreement with a bonding concern to make good his loss, even to stand behind the surety company to see that they did not lose.

No, gentlemen, it would have looked a little more palatable to me if there had been a surety company between me and my customers and also between me and every fellow that happened to sign this so-called bond.

Relative to Quarantine

The quarantine proposition is an entirely different thing. The only resemblance that it has to the other is that it was hatched in the same nest. There have been three pests hatched out of this nest—bonding, the ignoring of state inspection certificates, and quarantine. These last two constitute a double-header from the same egg and one died in the shell from too much light. I refer to the national disease program. These last two did not have the support of the southern press, but its opposition from the very first, both editorially and in the news columns.

No one can logically oppose quarantine, nor should any thinking person wish to, but when it comes to ignoring perfectly reliable inspection certificates from reliable breeders, signed by reliable state officials, that is something to think over. Most of the southern states have drastic disease acts calling for destruction of diseased colonies and the seizure of infected honey. Texas, Louisiana and Mississippi all have similar laws with active enforcement of same and all of them adjoining territory. They have all large areas that are clean and are actively cleaning up what is left.

This makes about the largest disease-free area in America, with active disease eradication work going on at state expense. All three states burn infected colonies and badly infected apiaries and quarantine the location for a limited time.

This leads one to several questions. The state of Wyoming, over its entomologist's signature (see February "Beekeepers' Item," 1925, page 52), admits that it is so diseased that often the prairie dog holes in the state have diseased colonies in them, and they cannot eradicate it and do not believe in trying to. The same entomologist will, in no way, honor an inspection certificate from a clean state like Louisiana, and, further, wishes to see the national program of disease control rigidly enforced.

In transporting bees, what carries the disease? The bees or the honey? Read what Elmer G. Carr, of New Jersey, has to say on this subject on page 119, March, 1925, American Bee Journal: "The disease is forever appearing in disease-free territory where no trace of contamination by bee or fixtures can be found. The natural conclusion is that the disease

favorably on, in Washington. It had a shrub in it for the bees to cluster on. I have had several varieties of cages, some extremely well ventilated, like old Johnson's first incubator, that had sixteen ventilators. It was the best ventilated incubator he ever saw, but it did not hatch a single chicken. Some of my cages would not deliver bees, either.

When it is established how bees may be delivered without combs and without loss, then we think it will be time to bar comb shipments.

We hope that Mr. Richmond, the new secretary of the League, will see this entire problem in its right light and end some of the antagonism which has sprung up among the beekeeping fraternity. Richmond graduated from Guelph, Ontario, and Canada is now quarantined against

bees on combs, but he also trained in Texas, and Texas is a shipping state and is affected by the proposed ruling. He is also state apiarist in Colorado, a buying state and one that has, so far, remained out of the controversy.

We note, too, that the same meeting which elected him as secretary went on record as favoring the movement of bees on combs and used equipment under State and Federal certification. This, coupled with the fact that the only new quarantine territory is a little corner in upper Michigan, makes us hope for a new day and a better feeling. We hope that the industry can go ahead and take advantage of the great opportunities opening up, instead of spending time combating destructive policies inside the movement.

from the combs. In such cases it is only necessary to shake a few more combs. If still too much nectar goes in, the combs are given a very light shake which dislodges part of the bees, and the rest can be brushed off. In theory, this nectar would provide food for the bees while on the road, but in practice I found that they went much better when no nectar was shaken in with them.

Loss of Queen With Packages

Another troublesome problem in shipping packages was to get the queen introduced. In shipping packages, the queen is usually reared in a nucleus and has to be introduced to the package. The common way was to hang the queen cage in the package and upon arrival the queen was introduced in the regular way. Some of the queens died in the cage before arrival and some were lost in introducing. A few days usually elapsed before the loss was discovered. Another queen was ordered, which might not be shipped promptly, so that when she did arrive the package bees had developed laying workers, with the result that the second queen was lost and also the package. Where one had a weak colony with a good queen, it could be united with the package bees and the loss was not so heavy. Where the package bees were united with another colony of package bees, the package was as good as lost, for, by the time the queen had laid enough eggs for the one package to take care of, most of the other package would have died off. I found it more difficult to introduce a queen to package bees than to a regular colony. To overcome this, I adopted the plan of introducing the queen to the colony from which I intended taking the package, and after she was laying nicely the package was filled with bees and the queen put in last and then the cover put on to make sure that the queen did not fly out. This plan gave the best of satisfaction, many writing in saying they would rather pay double in order to have the queen already introduced.

Cages

I tried a variety of cages and found no special virtue in any one so long as they were large enough. Size is very important, especially in hot weather. For a three-pound package I used the size ordinarily made to hold five pounds. I found that water was of no benefit. For feed I used candy made with invert sugar, the same as I use in queen cage candy, and found it entirely satisfactory. The main point in making candy is to knead in powdered sugar till it is hard. The harder the better. Many queens and package bees are lost from the fact that the candy gets soft and runs, daubing the bees.

The Ideal System

The last year we shipped package bees, I made a cage with a bottom that could be easily removed. The perfect system for installing bees with this cage was to take a hive filled with drawn combs containing honey and pollen. A frame of brood was placed in the center. An empty

Package Bees Before and After

By Jay Smith.

FOR a number of years, I sold package bees, but finding I was too far north for profitable shipping of bees, this line was discontinued. However, I gained some valuable experience while shipping, and found out how the customer wanted his bees shipped. Later, I wished to increase the size of my apiary, so I decided to purchase package bees. In purchasing, I had them shipped in the manner I found best when selling. This spring (1925) I ordered 125 three-pound packages from a reliable southern shipper, and the results, which were highly satisfactory, are given here.

Experience as a Shipper.

Before describing the experience gained by receiving these packages, I will give my experience as a shipper. Let me say to start with, I have a good deal of sympathy for the shipper of package bees. The purchaser wants them exactly a certain time, to be of benefit to him. At times a delay in shipping of one week would mean the difference between a profit or no profit. With queens, this delay would not be so serious. The packages may be ordered to arrive just before fruit bloom. The fruit blooms on time all right, but the bees are a week late. When they arrive, there is no nectar and the bees do not build up in time to be of much benefit for honey getting. The shipper could not get them up in time—bad weather, queens did not mate, floods, cyclones, couldn't get cages, help quit—but why go further? The variety of excuses is inexhaustible. While it is true that a nicely framed, carefully worded excuse will keep the purchaser from being your enemy, yet after all it was not excuses he paid for; it was bees, and the bees are what he wants. Therefore, the shipper should do everything in his power to send bees instead of excuses.

That is the way the purchaser looks at it, but let me give a few of the problems of the shipper. If there is no nectar coming in, I do not know of a meaner job than putting up

package bees. The gang of robbers follow you around and when you begin shaking in bees there is sure one hullabaloo! You set the filled cages down and the flying bees cluster all over them. Sometimes a virgin queen that is out for a flight thinks there is some kind of a celebration on and she joins the crowd. You brush them off, but they come back. In such cases I would brush a lot of bees off and then speed up the flivver in order to run away from the bees. This worked very satisfactorily, but there would be a string of bees behind doing their best to catch up. Every shipper has had the experience of having bees cluster on the outside of the cages, and gets tired of hearing the bystanders saying: "Look there, some of those bees are getting out." Later in the season a honeyflow comes on and the robbing stops, but a new problem comes in. In shaking in the bees, a lot of nectar goes in with them, which is apt to cause trouble.

Drowning Bees With Nectar

Many of the bees are soaked with nectar and drowned. If there is not too much, the bees will clean it up. In such cases the bees do not die immediately, but if they are to go on a long journey, they will arrive in bad condition. The reason for this is that they fill their honey sacks with nectar and have no combs in which to store it. This causes dysentery, and if confined long they will die.

A Pointer for the Shipper

Right here I believe is a point usually overlooked by the shipper. He sees the bees clean up the nectar and sees them start on their journey apparently in good condition. The purchaser sees them arrive in bad condition and does not know how to account for it. What is the remedy for this? This trouble can largely be overcome if care is used when putting the bees into the packages. If the combs are given a very gentle shake most of the bees will be shaken off and little nectar will be shaken

hive body was placed on top. Then the bottom of the cage was removed and bees and queens were shaken into the super. The cage was set in so that all the bees would go down. The queen at once began to lay, as the brood prevented any absconding. This system met with enthusiastic approval.

Buying 125 Packages

This year, as I wished to make considerable increase, I arranged with a reliable southern shipper to furnish 125 three-pound packages with their own queens. As I wanted these the first of April, I took them with old queens, some one and some two years old. I much prefer a package with a two-year-old queen already introduced than to have young queens that had to be introduced after arrival. Then again, all I wanted was to get the colony built up early. I intend to requeen before drones are reared. It was good stock, but as I have a strain that I am trying to keep as pure as possible, I prefer not to introduce new stock, even though it might be equal to my own. So certain that the queens would not be injured was I that I agreed to stand any loss in queens, provided the bees came through in good shape. The packages arrived as per agreement. The weather was cool and the bees were clustered in the top of the cages as contented as though hanging to the limb of a tree while swarming.

It is known that package bees are apt to abscond. This is because they have been confined to a small cage and they know it is no place for them to make a home. So the swarming or absconding fever takes possession of the colony. When hived, this notion still remains and it takes good management to rid the colony of it. Nothing will make them stay as well as a frame of brood with drawn combs, and fresh syrup sprinkled over the combs. But the plan of taking 125 frames of brood from colonies that could ill afford to spare it and give them to strong three-pound packages that did not need them seemed a heavy loss. Therefore, I figured that to have a few abscond would be more profitable than to rob weak colonies of brood so early in the season. However, I prepared the hives to prevent absconding in the very best manner that I knew. Fifty packages arrived April 3, just as the peaches were coming into bloom. As we did not have the required number of empty hive bodies to place on top, five frames of drawn combs were placed in the hives and the packages placed beside them. Sugar syrup was sprinkled on the combs. As the cage was set in, the cover was taken off and no bees shaken out. As the weather warmed up, the bees began to fly. In the afternoon, two packages swarmed out and doubled up with two more. As I was on the job, I saw where they went. The hives were opened, the queens rescued, the bees divided again and the packages and queens saved all right.

Sixty packages came the next day, and, while I was satisfied with the

performance of the day before, still I wanted to see if I could not prevent any from absconding. I concluded that as the fifty packages of bees were not shaken from the cage, this absconding spirit was present, and as soon as the bees began to fly they took it that there was a way out, and so absconding took place. The fact that there were combs in the hive made no difference, for they had not recognized that fact. So when the sixty arrived I decided I would try to put the idea into their craniums that there were combs in the hive and that after all it was a fine place for them to live. The combs were sprinkled with syrup as before, but this time I shook as many bees out of the cage on the bottom board as I could. Then here is the trick I played on them to get the big idea across: I lifted the combs and set them down on top of the bees. They had no choice in the matter, but crawled up on the combs and began to fill their tummies with syrup. They passed the word back that they had struck it rich and, as is usual in such cases, the rest came out to share the discovery. **Not a single package showed any signs of absconding.**

The other fifteen arrived next day and were treated the same, with the same results. Next day the bees were busy on the blossoms and nearly every queen was on the job. Three queens decided that the candy holder would do in a pinch for a hive and built a piece of comb there about half an inch square and laid eggs there. These had to be taken out by main force. One package had been showered with nectar when being put up and bees and queen were dead. One other had about half the bees dead from drowning and the queen was also dead. Two other queens, probably old ones, did not get on the job of laying and were escorted to the entrance by the bees. They were still alive, but the bees did not care to keep them.

As I had some weak colonies with young queens, these were united, so that out of the 125 packages received I have 124 good, strong colonies which are now beginning on the apple blossom. I consider the deal a complete success and more than satisfactory.

A Handy Book

Beekeepers who wish to identify trees and shrubs in winter when no flowers or leaves are present will find "Winter Botany," by Dr. William Trelease, professor of botany in the Illinois university at Urbana, very helpful. This book is designed to enable one to know the common trees and shrubs of the eastern United States by the appearance of bark, stems, twigs and buds. Beekeepers are finding more and more interest in the plants which are the source of honey and pollen, as well as those which may be used for ornament. The book can be obtained direct from the author. It is bound in flexible leather to fit the pocket and sells for \$2.50.

Beekeepers Get Acquainted

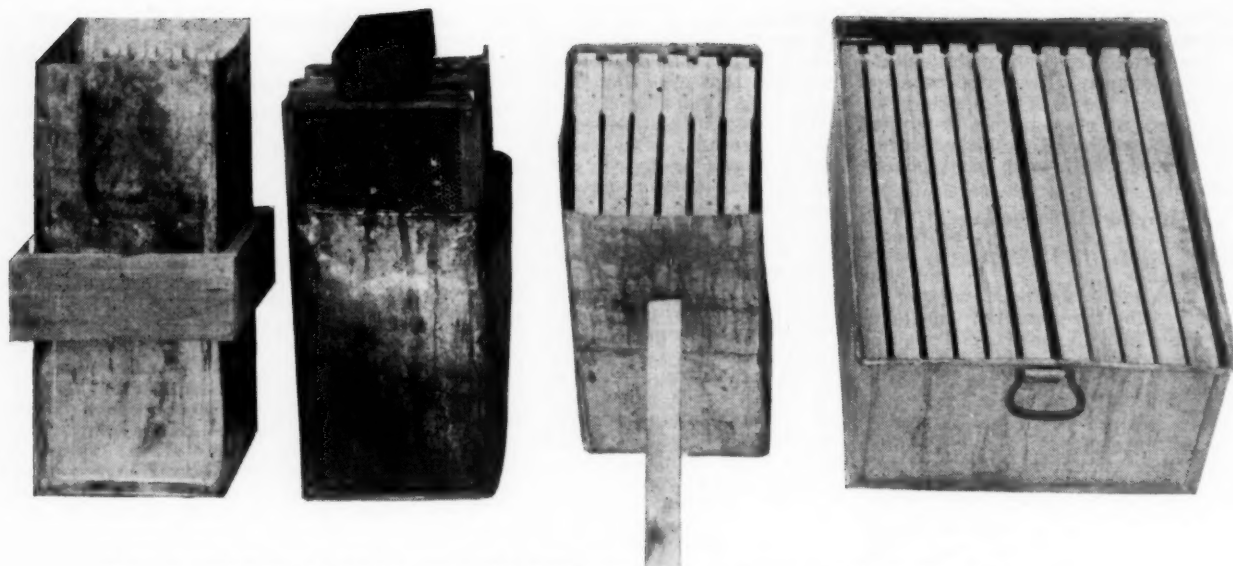
By A. V. Mitchener, Manitoba Agricultural College, Winnipeg, Man.

The third annual short course for beekeepers was held at Manitoba Agricultural College, Winnipeg, from January 19, to January 30, 1925. From our past experience we knew how difficult it was for us to know all our students by name in the short time they were at the College. We also knew that many students went away, after the two weeks stay, knowing only a few of their fellow classmates by name. This year we attempted to plan with the object of mutually getting acquainted.

Early in the first week of the course we had a group photograph taken of the whole class. Typed alphabetical lists of the forty-six members of the class with their addresses were prepared. These names were all numbered consecutively from one up, and each member of the class was given a copy of this list. Each member of the class was asked to come forward and indicate his or her likeness in the photograph. One of these numbered lists was also posted on the bulletin board just below the group photograph. We then suggested that each person should try to know by name as many of the class as possible. They were also supposed to know where each person came from. In order to make the contest more interesting, a prize of the book "Practical Queen Rearing," by Pellett, was offered to the person who was able to identify the most people in the class along with their addresses, the last day of the course. From the size of the crowd around the bulletin board before, between and after lectures, it seemed that the class was almost as much interested in its members as in the course itself. On the last day of the course each student was asked to come forward and sign a numbered register, and as each came forward to sign, his number was given to the class and each member present wrote down the name and address of the person signing. Forty-three of the forty-six students were present for this test. There was very keen competition. One member of the class, Mr. J. R. Andrews, MacDonald, Manitoba, not only knew everybody on sight but knew where each person came from. His nearest rival for the top place identified each person correctly, but made one mistake in an address. There were many others who knew the majority of their classmates. This scheme of getting acquainted proved so popular with the members of the 1925 class that we hope to use it again next year.

A New Bulletin

"Beekeeping for Beginners" is the title of a new bulletin recently issued by the University of Kentucky. It is written by Prof. H. Garman and covers just the things which the beginner should know. Kentucky beekeepers can doubtless secure copies by addressing Professor Garman at Lexington.



Types of small tanks for treating combs with Hutzelman's solution. Three are made of sixty-pound honey cans.

Saving the Combs with "Hutzelman"

Advantages and Disadvantages of the Formalin Solution

By Herbert J. Link.

GREAT losses are annually inflicted upon beekeepers by American foulbrood. The detection of the disease may be difficult to the average bee man, as at certain stages it resembles sacbrood or European foulbrood, both of which are passive and can be overcome by the introduction of good Italian stock.

Sacbrood and European foulbrood attack the larva in the curling stage, before sealing. Sacbrood, when removed from the cell, comes out in a sac-like, watery mass and does not adhere to the cell.

European foulbrood can be first recognized by a yellow discoloration of the larvæ. In the advanced stages there is a stringing when you insert a toothpick, and this will break at three-fourths to one inch, but the break is abrupt.

The initial stages of American foulbrood will often mislead the beekeepers. The first indication is the discoloration of the larvæ. The larva loses its pearly white appearance and shows a brownish tint. After the disease advances the larvæ begin to sink and become darker and darker, beginning to fall to the lower cell wall. The disease usually attacks the sealed larvæ, but, as it advances, larvæ in all stages of development shows signs of infection.

A perforated capping with a greasy appearance is the character most apparent to the average beekeeper. If you insert a toothpick or match into one of these cells you will note that it strings like glue for one to two and one-half inches. Usually at this time you are able to detect a penetrating odor similar to that of a glue pot. As the disease advances, 70 to 90 per cent of all the larvæ will show infection, as you can see by puncturing the cappings. The time to act is when you first notice infection, as

the colony is still strong. A colony cannot cure itself, and delay may cause contamination of all the colonies in your own apiary or the whole community.

The Formalin Solution.

Until 1922, it was compulsory to destroy the combs of infected colonies but now we are blessed with a solution made of 20 per cent formalin and alcohol, known as the Hutzelman Solution, with which to treat the combs.

After detecting the disease, remove the colony away from your apiary to a hospital yard. Usually we accumulate quite a number of colonies here and treat them all at the same time.

With new hives ready, you go to the hospital yard to begin operations. Set a new hive, or clean hive with full sheets of foundation, in the place of a diseased colony, placing the diseased colony back of the new hive. Shake the bees into the new hive, taking one frame at a time, placing the frame from which you shook the bees into an empty hive which is kept constantly covered. After all the frames have been put into this hive body we place it to the side with a bottomboard under it, contract the entrance, and let it remain until the brood has emerged. Three to six hive bodies can be stacked and the brood saved. After about fourteen days, shake these bees and remove the combs and hives to your honey house or cellar. Now you are ready for sterilizing.

Sterilizing Small Amounts.

Take the diseased combs one by one and uncap all sealed honey, extract it and put it into cans where bees will not have access to it. Be sure that all honey cells are uncapped. After extracting, the best

way to rid the combs of honey is to water-soak them for twenty-four hours in tanks or cans. These cans can be made from five-gallon honey cans by cutting out the top, as shown in the picture. If you are using a single can you will have to insert one end of the frames first and then the other as the cans are not deep enough to accommodate full frames. If you want the entire frame in the solution at one time, a good tank can be made by taking two five-gallon cans, cutting the top out of one and the bottom and top out of the other, and riveting or cleating them together. This style tank will hold from seven to eight frames. Tanks that will hold ten frames can also be purchased from Dr. Hutzelman. If you have a great number of combs to treat, a tank may be built to accommodate from fifty to one hundred frames.

After soaking the frames in water for twenty-four hours, the water should be extracted. Be sure that this water is disposed of so that no bees can get at it, as it will spread disease if they carry it to the hive. We find the best way to dispose of the water is to drain it into a sanitary sewer. After extracting the water, go over the frames to make certain that there are no sealed cells of honey. The frames are then ready for the solution.

In using the simple five-gallon can, insert eight frames (Langstroth size) and weight them down with a piece of iron or stone. Now add the solution. It takes about one gallon to a single frame. After soaking from forty-eight to seventy-two hours, remove the frames and insert the other end. By using a tank holding the entire comb, considerable time is saved, as only one soaking is needed.

For best results and working comfort, the solution should not be

handled at a temperature above 52 degrees, as the formaldehyde gas is given off freely at a higher temperature. This gas affects the mucous membranes and the eyes. It is also advisable to wear rubber gloves, as the evaporating qualities of alcohol dry the skin of the hands rapidly, causing checking of the skin, which is quite uncomfortable.

After the combs have had the solution extracted from them, they can be hung out into the open air to dry, as the alcohol leaves no poisonous residue. I want to warn you not to make your own solution, as most of the denatured alcohol contains violent poisons which will not evaporate, but will leave a residue which will kill the brood and taint the honey.

A Large Outfit.

The method just described covers treatment in small tanks or cans used mostly by the smaller beekeepers. I will now describe the tank used in our apiary. It is made to accommodate one hundred and fifty frames and is so constructed that we can slip the frames in from the top and each end. The frames are kept from floating by one-fourth angle irons riveted to the side of the tank, and, when the latter is filled, the frames are wedged to keep them in position.

When buying fifty to one hundred gallons of solution, it is shipped in drums, and, instead of drawing the solution out of the drum, I fasten a one-inch nipple onto the drum, attaching a section of one-inch hose, about four feet long, to the nipple with a female coupling on the other end of the hose. The tank containing the combs having been provided with a one-inch nipple and a gate valve, we attach the other end of the hose to this nipple. The valve is now opened and the tank containing the solution is hoisted high enough so that the solution will drain into the tank containing the combs. After soaking the combs in the solution for forty-eight to seventy-two hours, we lower the drum and open the valve. All solution not taken up by the cells will return to the drum, and the only solution you have to deal with is that in the combs. This means a great saving in work and there is no loss of solution.

During the past season, I treated four thousand combs, and find not a single case of disease in any of the treated combs. The cost of treatment is about seven to ten cents each. Considering the time it takes to build combs and the value of drawn combs, the Hutzelman solution will save thousands of dollars to the larger beekeepers. I am of the firm belief that many of us larger honey producers are spreading the disease in our own yards by shifting combs from one colony to another. The only safe way to overcome American foulbrood, in an apiary run for extracted honey, is to treat all extracting combs and not place them on colonies until you have examined the latter for foulbrood also. An ounce of prevention is worth a pound of cure.

This solution will also loosen all the pollen in pollen-bound combs so

it will fall out of the cells, or so that the bees can clean it out. Every cell in your combs will be available for honey or brood. This alone is worth the price of treating, as you can reclaim your old pollen-bound combs. Also, after treating, the moth does not deposit her eggs in the combs.

A Few Cautions.

Having given the big advantages of the solution, I wish to emphasize the great importance of not easing our minds with the belief that American foulbrood will now become extinct. We will need just as many bee inspectors as before. There will still be beekeepers who will slip somewhere and spread the disease in their own yards and in their communities. The treatment water may be poured out in the open where the bees will have access to it, or it may be kept standing in containers where bees can get to it. Hives may not be sterilized if honey is left on the inside walls. The beekeeper's hands may be sticky, thus leaving honey on the handles. The solution cannot be blamed for the disease occurring where absolute sterilizing has not been applied to all parts of the hive and tools.

Under no consideration should swarming bees be hived on full drawn combs where American foulbrood exists, as the issuing swarm may have honey containing the germs of the disease. New swarms should be hived on full sheets of foundation. The colony is then in the pink of condi-

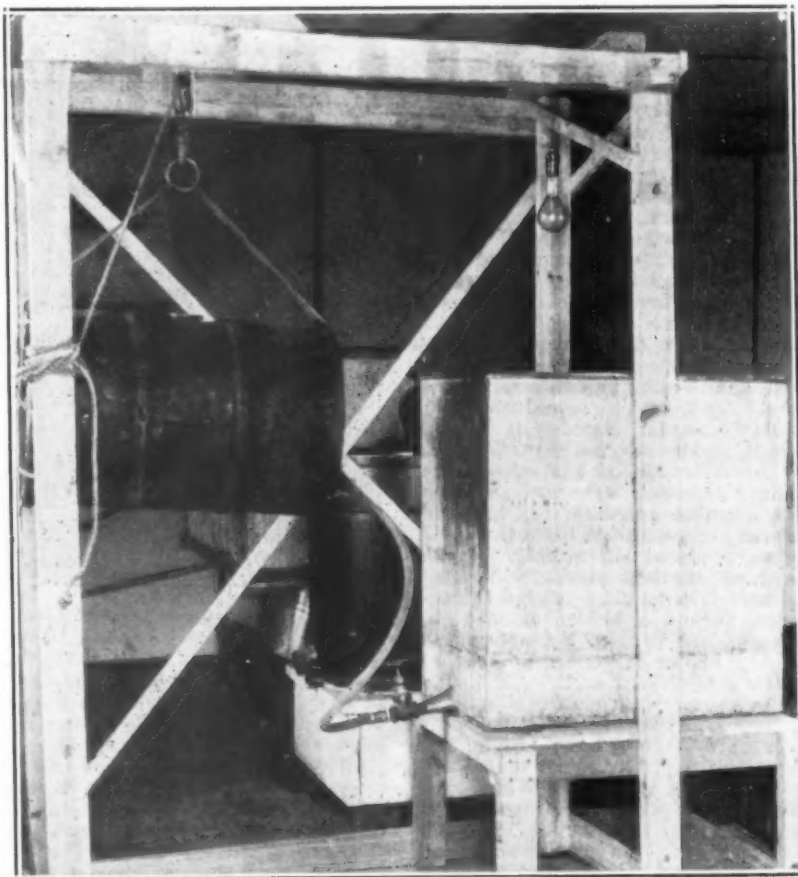
tion to build combs, as they, at this time, have many wax builders and carry plenty of stores to go on with the work. After four or five days you can insert treated combs, as all the surplus they carried will have been used up and there will be no chance to spread the disease.

The only drawback that the solution has is that it may help careless beekeepers to spread disease to all their colonies by not being thorough and missing honey cells.

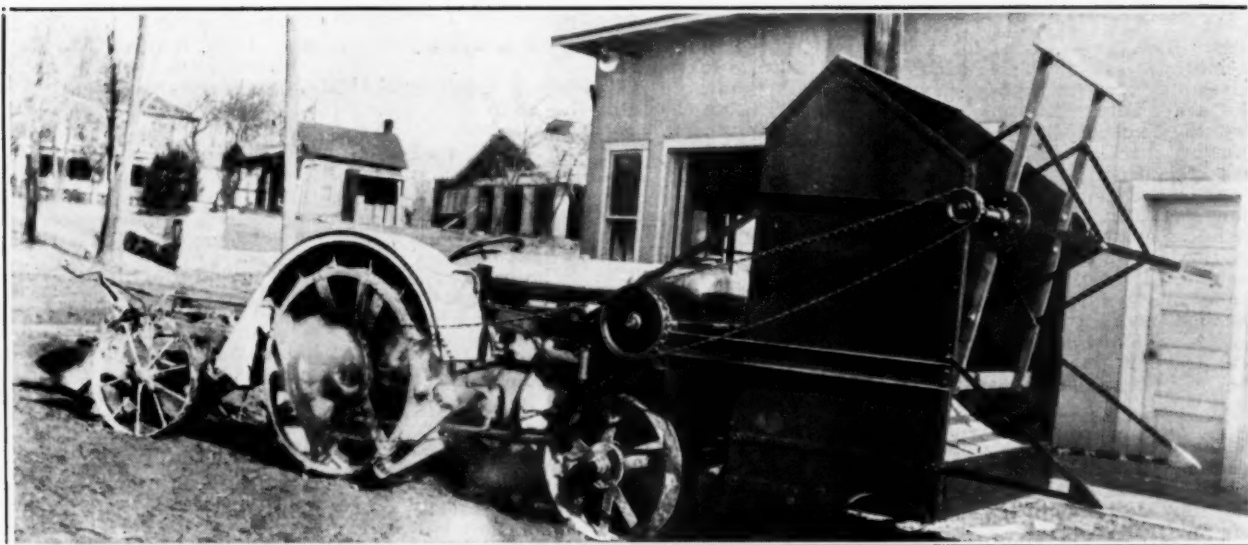
I am convinced, however, that it is the logical salvation of the disease situation, and beekeepers owe a great deal to Dr. J. C. Hutzelman for his efforts in finding a solution that will kill the spores of American foulbrood, thus saving many dollars to the honey producers of this country.

An Italian Translation

The French work of Perret-Maison-neuve on "Intensive Beekeeping and Queen-Rearing," which is about to be published in a third edition, has been translated into Italian by Dr. Montagano, of Turin. The only fault we can find with this translation is in the quality of the paper, which is too low to permit of the producing of neat cuts. But we must bear in mind that the European countries, and Italy among them, are still suffering commercially from the results of the war. This book ought to find ready sale in Italy.



Portable outfit for treating combs in large numbers.



Taggart's sweet clover seed harvester is made for either horse or tractor. This shows tractor-propelled machine with plow in rear.

The Taggart Sweet Clover Seed Harvester

By W. Floyd Keepers, Associate Editor, *Prairie Farmer*.

OF the many jobs for which the Fordson tractor has been used to lighten labor, none is of greater benefit to the farmer than that to which Claude Taggart, of Clark County, Illinois, has put it—i. e., harvesting sweet clover seed.

Someone has said that sweet clover, unlike goldenrod, is no longer a weed to be sneezed at. This is true in every part of the corn belt, where this crop fills a prominent place in most good crop rotations. The one handicap to sweet clover raising has been the problem of seed harvesting.

Taggart, through the use of a Fordson tractor and an original idea, has solved the problem. Harvesting sweet clover seed had been one of the hard jobs on his farm as on other farms growing this valuable crop. It is said that there has been more profanity lavished on this job than that of harvesting any other small grain crop, even barley, which is notorious for its sharp beards. Because of its rank growth and woody nature, sweet clover is difficult to harvest with a binder, although this has been the best machine available for handling the seed crop up to this time. A mower is not at all suitable, because the seed shatters easily when ripe and cannot be handled without large losses. When a binder is used the canvases are usually torn to pieces and the binder is generally a wreck before the job is completed.

The loss of seed in threshing from the bundle is likewise great. In many cases entire crops have been lost because of bad weather or long waits for threshing outfits. When the clover stands, storms and insects beat the seed out of the bundles. Hauling the bundles to the machine is likewise a wasteful operation. Threshing machines, even though equipped with the ordinary hulling attachments, do

only a fair job of hulling and cleaning the seed. Only the largest sized hullers are adapted to handle sweet clover and the depreciation on these machines is considerable.

Through the use of a simple apparatus which is carried right on the Fordson, Taggart threshes his seed

nished by the drive wheel of the tractor. The gears are so arranged that the reel makes four revolutions to one of the tractor wheel, or about one hundred revolutions per minute.

The seed box is screened over the top, and the reel running clockwise over the tops of the standing plants drives the seed back into the box before the plants are crushed down underneath the box and tractor. It is necessary with this outfit to remove the seed every two or three rounds of an eighty-rod field. In order to prevent the accumulation of stalks and rubbish, a sloping one-quarter-inch screen is placed in the box. The seed goes through the screen and the rubbish slides off onto the ground.

When the hulled seed is dried it is ready for scarifying and cleaning. This removes the hulls and prepares the seed for an early germination when it is planted. One of the advantages of this outfit is that the threshing or cleaning of the seed can be delayed until the slack season of the winter. It is not necessarily a rush job, but one that can be handled at any time.

The same principle which Taggart has applied to his Fordson outfit has been used by remodeling old binders. All of the binding machinery is removed and a heavier reel is substituted for the ordinary one. The sickle and canvases are removed and the machine is then ready for harvesting, except for the addition of a box-like arrangement over the platform. This kind of a machine works very well, but is a hard one on horseflesh. The horses are forced to travel through the stubble which has to be tramped down by the machine.

W. A. Newlin, of the Casey, Illinois, high school, used two of these



Taggart harvester at work in field.

from the standing stalks. His machine is a four-reel affair similar to an ordinary binder reel, only heavier. This reel beats the seed from the stalks back into a covered box, or platform, which is carried on the front of the tractor. Two I-beams are fastened to the frame of the tractor parallel with the gas tank. These are curved outward at the front to hold the seed box, which is five feet long and three feet deep. The driving power for the reel is fur-

machines last summer in his agricultural class work. The members of the class built the machines and harvested seed in the neighborhood on a share basis. They already had a scarifying and cleaning outfit and have been able to furnish the farmers of that community with a good supply of excellent seed.

By the use of the Fordson outfit, Taggart has been able to increase the efficiency of the seed harvesting operation to a considerable degree. He attaches the ordinary two-bottom Fordson plow behind the tractor and thereby accomplishes two jobs at one time—i. e., threshing seed and plowing the field. On each trip through the field he harvests and plows a two-foot strip. This double-duty outfit is somewhat slower than the tractor and plow alone, due to the handling of the seed. It is proving to be a good plan, however, to plow the sweet clover stubble under immediately. Farmers who have handled the crop have learned that it is necessary to plow it soon after harvesting the seed, because the roots decompose rapidly and the stubble pushes ahead of the plow, unless there is some attachment still left to hold it to the ground.

Clark county, Illinois, farmers who have watched the operation of the

Taggart outfit this last year are enthusiastic over it. They want to use sweet clover as a three-way crop—for soil building, for a pasture crop, and as a seed crop. This harvester permits all of these uses. The idea is not a new one to Taggart. He first used a similar outfit on a larger tractor in 1920, but it did not prove as satisfactory as the Fordson. There are other harvesters on the market or in the process of manufacture, but none have proven more practical than this simple outfit used by Taggart.

One of the chief advantages of this outfit is that it eliminates a lot of hard work. It does a complete job. When the seed is harvested the crop can be stored in a small space. The refuse is plowed under and does not have to be hauled back to the field again. The fertility is left on the soil and is not transferred to other fields or wasted. It is also a money-saver. Threshing bills are completely eliminated and the depreciation on machinery is practically nil. The labor attached to the harvesting of seed by this plan is distributed advantageously.

The idea which Taggart has so successfully put into practice has added a new use to the already large and varied repertoire to which the Fordson tractor is adapted.

vermin seek warmth in the clothes. Last summer I carelessly threw my hat and veil under my bed and in the morning put it on without shaking it out. I felt a scorpion creeping on my forehead. I threw off the hat at once and captured the beast.

Often by night my workmen, lying down on the floor, call out: "Master, a scorpion or centipede stung me." I put some ammonia on the spot and tell them it will be all right, as they are not sensitive and rather hard skinned. In the morning all is well, except sometimes a big nose or a lip hanging down, to the great joy and mockery of the others.

One day we have to fight against the dreadful heat of the sun—no shelter, no trees or bushes. Wrapped up in the bee clothing, as the bees are awfully wild, the workmen have their jug of water near them, every few minutes pouring the water through the veil into their throats, but most of the water flowing over onto their clothes, so that after work their clothes are soaked by their perspiration and water, and need, every time, a good wash to clean them. By night the mosquitoes and sand flies are very disagreeable. I generally use my bee veil for the face, but they still find their way through to suck a little of the blood. After all these troubles come the troubles of my ignorant workmen, slow in their movements, saying, "Speed is of the devil and calmness is of the Lord."

Anyhow, it is not easy to get through all these troubles and one must be acquainted to withstand all that; but, being in the land of fatalism, I go on quietly and say, "What is written shall evidently happen."

For several years the rain in March and April has failed, so the honey crops are mediocre, as the whole country depends on rain. Last year we had nine and a half months heat, without a drop of rain, but still the average of honey, in spite of the drought, was 100 pounds per hive. In a good season it is double. My first crop is in April, orange blossom honey, then the lavender and sage honey in May; cactus honey also in May; Acacia honey in June and July, and wild thyme honey in July. I have to transport my bees in different directions on camel back, eight double hives to a camel's charge, by night, and often with adventures. If a camel gets frightened, he shakes the load off or sometimes stumbles and falls, so the bees get out and immediately the ropes have to be cut and the load turned over, with the saddle and all. This adds to the adventures.

Beekeeping Bulletin

A new bulletin has recently been issued by the Manitoba Agricultural College, entitled "Beekeeping." It is written by L. T. Floyd, Provincial apiarist, and A. V. Mitchener, professor of entomology. This bulletin is written especially for Manitoba beekeepers and deals with their particular problems. Copies may be had free by addressing the Publications Branch, Department of Agriculture, Winnipeg, Manitoba.

Troubles of the Beekeepers in Palestine

By Emile Baldensperger.

PERHAPS it might interest your readers to hear something about beekeeping in Palestine and some of its troubles.

It tells us in the Bible, book of Nehemiah, 4:17-18, how the Jews, coming back from their captivity, rebuilt their temple: "Every one with one of his hands wrought in the work and with the other hand held a weapon; and every one had his sword girded by his side and so builded." Now I give this example, being in the same land where that happened some thousands of years ago, and it is not very much changed in some ways, not in the construction of the temple, but in working bees in isolated places, either in the plain of Sharon or in the mountains of Judea. Before the war I had always my revolver girded on my waist (if the Jews at that time could have had revolvers surely they would have preferred them to the sword dragging after them), as the firearms or any other weapons were not prohibited by the Turkish government, but are now since the British occupation, which is very hard for the country people, as there are often robbers, who are always armed and can easily rob the people.

Fortunately, I was never obliged to use my revolver against the robbers, but often against hyenas, to frighten them. I found, in a friendly way, that it is easy to treat with the worst of the robbers. Knowing a band in the environs, I invited the chief to my tent, offering him the traditional cup of coffee, some tobacco, and a lunch, consisting chiefly

of honey, which they greatly appreciate. By that manner of treating them, they are my guardians instead of my enemies, and I can do my work in all security and sleep quietly by night, having the robbers as my watchmen.

One evening a chief came to my tent. I asked him to keep quiet all night, so he prepared his place to sleep before my tent and lay down. At midnight I went to look after him, but found him gone. Early, by day-break, he came back and lay down in his place. I told him: "Ali, you promised to keep quiet. Why did you go away?" He said he had some business with his cousin in town and could only see him by night; but some hours later we heard that, a few miles off my camp, four camels were stolen. When the chief came in the evening I reproached his deeds. He told me: "Master, please don't interfere. This is my way of living; if God would be against it He would never allow me to do it. God punishes the robbed people through me." I told him sooner or later he would have to pay, either by his life or by imprisonment. He answered me: "Even if I repent and change my manner of life, what is written shall happen; nothing can avoid it." A year later he was killed. It was written that he should be killed that day.

So with robbers I could arrange to be on friendly terms, but with the wild beasts and vermin, as serpents, scorpions and centipedes, not knowing their language, I must be very careful, shaking off my clothes and boots in the morning, as these

THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

SHAKING TROUBLE

Recently the state bee inspector was at my place and found two hives afflicted with American foulbrood. I shook both colonies on new foundation in new hives and completely destroyed all brood, honey, hives and frames. Four days later I examined the hives and found that one colony had completely ignored the brood chamber and had built 5 combs all the way across the cover of the hive and the full depth of the cover, which is a deep one. Can you explain why they did this, and will you tell me how I can get them down?

How would it be to bore several holes in top of cover and set it on bottom board and put brood chamber on top of cover? Would they work themselves up when cover is full?

WISCONSIN

Answer.—Your bees went into the cover of the hive, because the queen crawled into it and they followed her. You might do as you suggest and put the cover at bottom and the hive on top, boring holes in the cover for them to go up into the main body. But if, as you say, the cover is a deep one, they may stay the entire season in that cover and may want to winter in it. In that case you will have to transfer them out of it in spring. It might be best to drive them out of that cover with smoke, cut out those combs of brood and fasten them in frames with wires, as described by us in March, 1924, page 124. Then you would give those combs to the bees in the brood chamber.

The important thing is to get the queen into the brood chamber. If you get her there, the bees will follow without difficulty. Of course, if you left combs of brood in that cover, many bees would remain in it to take care of the brood. When it was all hatched, they would join the rest of the colony. It is best to get both the queen and the brood into the brood chamber, which is the proper place for them.

PUTTING BEES TO WORK

June 26 we hived a good sized swarm from an old colony. They went to work. The old colony has practically loafed since, and is now, July 11, trying to swarm. They have come out three times in the last four days and gone back again. Is there anything we can do, or will they settle down to work soon? There are two supers on the hive, the first of which is about two-thirds full. The hive is a standard hive, I think; the brood frames have no foundation and are filled so we cannot remove them without breaking the comb, so we do not know the conditions within the hive.

WISCONSIN.

The reason the old colony appears to loaf is that it lost all of its field workers, or nearly all of them, with the swarm. Besides, the workers that were left in the hive had a large amount of brood to care for. Now that the brood is nearly all hatched, they find themselves a little crowded, therefore try to swarm. Usually the first swarm goes out about a week after the bees have begun the rearing of queen cells, though they often swarm earlier or later. In your case, it is quite probable that the colony waited to cast its second swarm, till the young queen was

ready to mate. Hence the delay and the repeated attempts. It is quite likely that they will give it up. If they were to swarm, the hive would probably need to be given some brood, as it might remain queenless.

It is very bad to have a movable-frame hive so that the combs cannot be removed. A box hive is better than such a hive. I would advise you to transfer the combs straight into the frames next spring, at apple blooming time.

QUEENLESSNESS

1. I have one colony of bees that came through the winter queenless but very strong. I have given them brood three different times. They build queen cells but I can never find any queen. The colony at present is quite strong and bringing in honey. Has this colony been queenless too long to require?

2. I have another colony which was of only ordinary strength. I accidentally killed the queen June 3 while raising brood to the upper hive body. The colony had quite a bit of brood and bees to make increase. June 18 I examined those colonies. The queens have hatched but I could not find any queen or eggs. What could the trouble be? Have those colonies got a chance to be requeened? If so, what method would you prefer? Our main honeyflow is now at its best. It is mostly white clover and alsike.

3. When is the best time to make increase?

MINNESOTA.

Answers.—1. My opinion is that the colony has an old queen which is too old to lay, but manages to kill the young queens before they hatch. Shake the bees into a box, then put a queen excluder on and drive the bees out with smoke; you will probably find the old queen if you cannot do it otherwise. If that is not the correct answer, then I give it up.

2. June 18 was too early for a young queen to be laying, but she may be laying when this letter reaches you. A young queen is hard to find, as she usually hides in corners. But when she begins to lay, she is more sedate and stays on the brood combs.

3. Any time when the bees are harvesting honey is a good time to make increase. You can make increase at other times, but you are more troubled by robbers and you may have to feed the divided colonies.

SCUM ON HONEY

What shall I do to prevent a white scum forming in the 1-gallon cans and 5-gallon cans? I always put my honey as it comes out of the extractor in 1-gallon cans (friction top), but in every can, when I open it, I find that white scum. This summer I will put it all in 5-gallon cans for marketing, but how to prevent that scum? I will also heat every can (in hot water) and bring the honey to 140 degrees to prevent granulation. Would it be better to put the honey in open pails, skim off that white stuff and next pour the honey in the 5-gallon cans. The open pails will be in hot water, of course.

MONTANA.

Answer.—It is evident that your honey needs a little more evaporation at the time

it is put up. If you heat it, it will help evaporate it and prevent that forming of scum. But do not boil it; do not even heat it to over 140 to 160 degrees. Otherwise you would spoil its flavor.

If you do not heat the honey, it will probably evaporate considerably if you keep it for a few weeks in open vessels in a very warm room, during the end of the summer.

Another thing that may help to prevent any bubbles is to use a goose-neck faucet, which reaches down to the bottom of the jars or cans in which you pour it, so that the air does not get mixed in with the honey as it goes down. But if you are very careful you may not need it. I never did use one myself.

You might try both the ripening in a warm room in large receptacles and heating over hot water. Beware of overheating.

EXTRACTING SUPER OVER SECTIONS

1. Would it be all right to place an extracting super with one comb of honey and the rest filled with only foundation, on top of 4 comb honey supers which are partly filled, to catch the honey that is coming in when the comb honey supers are full, to avoid crowding of brood chamber with honey? Or should this extracting super be placed under the comb honey supers? Which is best? I am just asking you this because I intend to be away, so cannot take off the comb honey supers when they are full. What would you suggest to this plan?

2. What causes a queen to stop laying all of a sudden in a good honeyflow? Will this queen be any good afterwards? When I looked in the hive the bees were apparently trying to ball the queen.

3. Can a swarm, when it is once in the air, disappear in about 20 seconds so that it cannot be seen?

MINNESOTA.

Answers.—1. If you put the extracting super under the partly filled section super, the bees will desert the comb honey super, because they prefer working in large frames. But if you place an extracting super over the top of a comb honey super that is already nearly full, the bees will put their surplus honey in it after filling the sections.

2. I don't know. Queens do not usually stop laying during a good flow. Guessing at it, I would say your queen is no longer there, but swarmed. The queen you saw balled might have been a young queen. If that don't solve the riddle, I cannot solve it.

3. It takes more than 20 seconds for a swarm to get out of reach unless it has been out quite a while and has been whirling around. When they get started once it does not take 20 seconds for them to get out of reach.

GETTING BEES FROM BOX

As I had a swarm given to me that was hived in a box, with cross pieces nailed every way, and some had lots of combs and brood in it, I put this box on top of a hive and cut a large hole in it and closed the entrance so as to make the bees go through the hive. Will they soon quit the box, or shall I run them out and lose the comb and brood?

Should a prolific queen move fast?

MONTANA.

Answer.—If the box in which the bees are is shallow, you may be able to get the bees to go into another story readily. But if it is deep, it is quite likely that the queen will remain in it.

Putting this box at the bottom and a story on top, with comb foundation sheets in it and a big opening between the two stories, might induce the queen to move above. If

the colony is strong in bees, the queen might be driven upstairs with smoke and drumming, and enough of the bees would stay down to take care of the hatching brood. This may be done best with the frame hive above, as bees climb up more readily than they go down. I would by no means expect to lose that brood.

As to your question. Should a prolific queen move fast? If I understand it right, I would say, a prolific queen is always leisurely in her motions. She is heavy and slow acting, unless frightened.

BEES REMOVING LARVAE

I have a colony of bees that for the last few days are carrying out the young bees that are in the larval stage and are full grown. Some of these are alive when deposited on the ground by the bees; others are dead. I notice some of them appear to have been eaten on, some on the heads and some on the tail, and others have no signs of anything wrong with them.

I have examined the combs and they do not have any appearance of foulbrood, neither do the larvae; and they come out of the comb nice and full size.

My other colonies appear all right, just this one being affected. ILLINOIS.

If something of that kind was to happen to one of my colonies, I would judge that they were short of stores. The larvae eat a great deal. You are probably aware of the fact that in the first five days of its existence a larva eats so as to increase in size 1500 times. If the bees are short, they sometimes throw them out, especially the drone larvae, which they appear to recognize. Probably the live ones which they threw out were drone larvae. I'll venture the assertion that, by the time you get this letter, the throwing out of larvae will have come to an end, as this is a time when they are likely to find honey if the weather is good. They may throw out drone larvae even when they are not short.

If I missed my guess, I will give it up.

BUTTONBUSH HONEY

1. Does buttonbush yield much honey?
2. Would it pay me to move my bees about 15 miles after the clover and basswood flow to get one from buttonbush?

VERMONT.

Answers.—1. Buttonbush is a fair honey plant wherever we have heard it mentioned.

2. It is quite probable that it would pay you to move your bees to those low lands where the buttonbush grows, because there are probably a number of other plants that yield honey when there is none on the hills. We would not find it profitable to move bees just for the buttonbush, but for all the flora of the low lands it is preferable in dry seasons.

WHAT IS WRONG?

1. Please let me know what is wrong. I have had bees three times and they always die in the spring before time to put outside.

2. Now I would like to start in beekeeping, but would like some information as to how to winter same and where to get bees. MINNESOTA.

Answers.—1. It is impossible to tell you what is wrong unless you describe the conditions of your colonies.

2. You should buy some text books and learn what is necessary in order to succeed. When reading a text book you will probably be able to recognize what was wrong with your bees, whether they were queenless, or short of honey, or diseased.

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"The Spirit of the Hive"

A Review by Francis Geithmann

To beekeeping, one of the oldest and noblest of crafts among men, a lofty tribute has been paid by Dallas Lore Sharp in his new volume, "The Spirit of the Hive." At this season of the year, when miracles are in order, this interpretation of the life and romance of the little "bee-people" is worthy of a royal welcome. If the reader does not believe in miracles before perusing it, he certainly will afterward.

All through the book the reader feels that Mr. Sharp has entertained the bee in his heart long before he dared to put her on paper. With the hand of a craftsman and the heart of a poet who understands akin to John Burroughs, he has succeeded in humanizing all of the manifold activities of the "winged fairy folk." The book is also studded with flashes of religion, of logic, of philosophy, of ancient prophecy, of history, of sociology, and even of political economy. Every page is luminous with the spirit of that immortal something within bees as well as men. Yet withal, it glows with certain homely phrases such as "The pollen sticks to her as soot sticks to a chimney-sweep," and so the reader manages to keep his feet on the ground while absorbing each enchanting page.

In his reflections on the queen, Mr. Sharp thinks she is "the incarnate principle of life, potent beyond measure, immaculate in her mating, and, except for the thin shell of body, life's essence, sublime and pure." Her business from the cradle to the grave is to fill upwards of one thousand waxen cradles every day, to literally "lay her weight in eggs twice over."

He speaks of the various honeyflows, nation wide, from Canada to the Gulf, from Massachusetts to Cali-

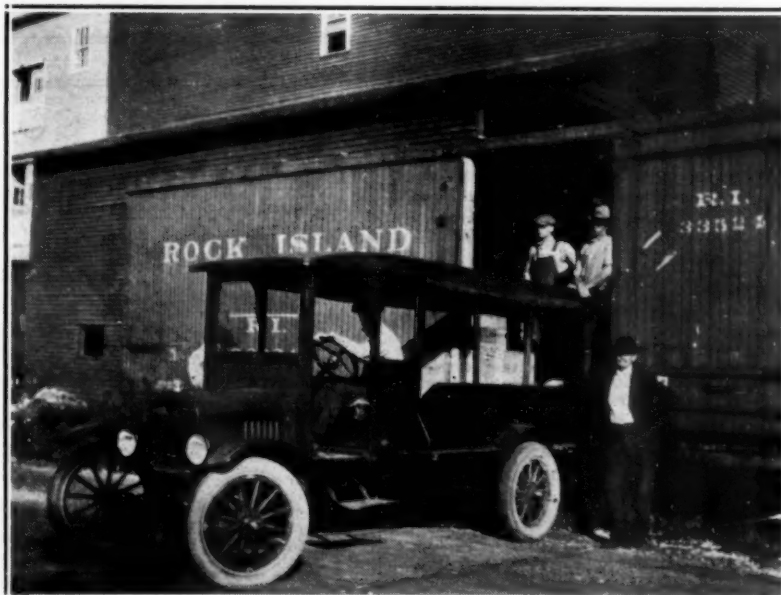
fornia. From his Hingham hills, the bees in his garden apiary had just gathered more than a "quarter of a ton of distilled mint and clethra and goldenrod." Some nineteen years ago, Mr. Sharp invested \$4500 in his Hingham home, where three hives of bees, just so much poetry, attracted him from under the hickories. There he learned not to "keep bees for a living," but "to live to keep bees."

In dwelling on the moral and physical triumph of his bees over the weather, and the bleak days of March and their first spring flight, which he calls their "cleansing flight," he says: "Not a beekeeper would I discourage. The very opposite is my purpose—to multiply the keepers of bees till the last honey blossom has its insect visitor, and every possible man a hive, and so, a home for his soul."

In his chapter on "Bee and Blossom," descriptive of the ardent toiler carrying the golden pollen from flower to flower, Mr. Sharp states: "It is while the bee is about the very practical business of gathering stores for the hive that she incidentally performs for the flowers this beautiful and essential work. So far as conscious purpose goes, she might be a child tumbling into a half-filled flour barrel and scrambling out rather clumsily, white from nose to toes."

He considers the hexagonal cells of the bees a triumph of architectural science and dwells at length on the long siege of sweating out the wax, the patient forging of cradle material and the incomparable wisdom of the winged builders.

Regarding the mysterious motive power behind the swarm's mad flight, Mr. Sharp even hazards a guess or two of his own. He even goes so



L. L. Ness, of Morris, Illinois, loading car of sweet clover honey. Ness is located in the Grundy County clover belt and gets most of his crop from this source. Prior to the general planting of sweet clover this was not a good location.

far as to miss a hot political meeting and a chance to distinguish himself on the stump for a future in the United States senate by climbing an old red oak in his best political clothes and capturing one of his own errant swarms with the aid of his wife's new clothes line.

With every bee an able co-operator, there is a high spirit of morale dominating every community of "bee-people." The spirit of every individual bee is daily charged from this "generating dynamo of the hive."

In this prose poem of Dallas Lore Sharp, after the reader has been introduced to the "queen, worker and drone, the traffic in honey and pitch and pollen and wax, the spring swarming, the uncertain and exhausting harvest" he is carried for "4040 speedometer miles" from Hingham of Massachusetts to Santa Barbara of California with more bees all along the trans-continental trail.

Leaving behind him his fragrant Casa Loma garden, Mr. Sharp invites the reader to turn bee-hunter along with him and to strike out into the California hills, studded with live-oaks, on a real bee-tree adventure.

The book is all poetry, the poetry of the bee, both ancient and modern, and through it all the reader must be impressed with the deep sincerity of the writer. It is a symphony with sincerity as the keynote. There is also a lucid quality of sunlight flaring across every page, a clarity of vision worthy of the worker, the drone and the queen.

("The Spirit of the Hive," by Dallas Lore Sharp, Harper & Brothers, New York., \$2.50, may be secured at the Bee Journal office.)

Encourage the Wrens

Don't forget to build a few houses for the wrens and put them up around the apiary. They will appreciate most any home you would care to furnish for them.

We built six little houses and put them up around the apiary last spring and they occupied every one of them. Some of them raised three families during the season. They are great consumers of the moth-millers, and you will do the bees as well as yourself a good turn by encouraging the little wrens.

Leroy Churchman,
Kansas.

Gratifying Praise

We have the following letter from the Czechoslovak Consulate General: "In May, 1925, there will be in Prague, Czechoslovakia, an Agricultural Exposition of which one of the important features will be an International Exhibition of agricultural newspapers and magazines.

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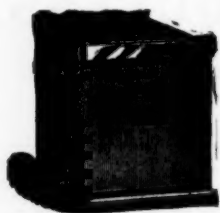
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(The Bee & Honey Man)

in the exhibition. We should be, therefore, obliged to you if you would send us one copy of your periodical for the above stated purpose." A boost now and then is of considerable help.



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Meetings and Events

A Selling Record

C. C. Cook, the Palm Apiaries, La Belle, Florida, writes us about a selling trip: "I made a four-weeks honey selling trip. Sold about 45,000 pounds, nearly \$6,000 worth. Made about 2,000 miles, at a cost of \$59 for all expenses. Total amount sold in 1924, 2,414 cases, 128,625 pounds (shipping weight), \$16,759 worth. It took 90,000 pounds of honey; we produced 70,000 pounds and bought 20,000."

Convention Reports

The New Jersey beekeepers have recently published the proceedings of two conventions, 1924 and 1925, in one volume, edited by the secretary, Elmer G. Carr. Such publications are of great value to the membership, since they provide a permanent record of the organization.

The report of the Illinois State Association has likewise recently come from the press, under direction of Secretary M. G. Dadant.

Recent Japanese Publications

Judging from the numerous publications relating to beekeeping issued in that country, the Japanese must be alert beekeepers. While most of their publications coming to this office are printed in the Japanese language an occasional one is printed in English. Such is the bulletin relating to the Japanese honeybee by Yoshinobu Tokuta, reprinted from the Bulletin of the Imperial Zootechnic Experiment Station of Japan at Chiba.

Since much attention has lately been aroused in eastern races of bees, many students of beekeeping will be interested in securing this publication.

Another recent publication from the same country is entitled "Studies on Poisonous Honey in Japan" by Dr. Y. Tokuda and E. Sumita. The greater portion of this publication is printed in Japanese.

Hoo Hoo Club Favors Basswood.

Russell H. Kelty writes:

"You might be interested to know that the local Hoo Hoo Club has completed arrangements for planting five miles of trees, May 1, along one of the leading trunk lines of Lansing.

This is a part of national observation of tree planting day, instituted by the National Order of Hoo Hoo, first observed last year, and when I found out that white pine, walnuts, ash, mulberries, hickories, etc., were the trees they intended to plant, no mention being made of basswood, I immediately got busy with the officers and suggested that basswoods should be planted, for the benefit of the bees.

Strangely enough, the Isaac Walton League of Saginaw has also sent their representative here to suggest that basswoods be included along with mulberries for the birds. As a consequence we have their promise that a substantial part of the trees planted will be basswoods."

A Drastic Cleanup.

The beekeepers of near Marathon, Brewster county, Texas, have just gotten to where they do not like foulbrood. There is none in the county except what some fellow ships in, every once in a while. Soon as it is found the whole yard and everything that goes with yard is burned in a pit, then covered with dirt, after the fire goes down.

Sometimes we pay dearly for them, too. The last fellow would not let us burn his bees till we gave him more bees, which we did cheerfully before we would take a chance of foulbrood getting started over the country. There are so many bee caves in the woods that it never could be gotten under control.

I gave twenty-five colonies rather than see this man shake his bees on foundation. He had 292 colonies. We burned the bunch, all in one pit, the night of May 25. Mr. Rude, of College Station, Texas, was in charge of the cleanup. He stated that this number was the largest he ever had burned in one yard or at one time.

A. B. Anderson, Texas.

Beekeeping Experiment on the Delaware Coast

On May 9, Mr. James I. Hambleton, apiculturist, Bureau of Entomology, Washington, D. C., began an experiment on the coast of Delaware to ascertain the effect of various weather factors upon the flight activities of the honeybee. In the region chosen for carrying on this work there are no nectar-bearing plants. Consequently the use of an artificial honeyflow, which may be regulated at the wishes of the experimenter, is made possible. By maintaining a constant, uniform supply of sugar syrup in a series of feeders, variations in flight activities will be due to causes other than availability of this source of food. An effort will be made to clear up other obscure matters concerning the behavior of bees, which should prove of considerable benefit to the beekeeping industry. The following temporary helpers are assisting in this work: Miss Elsie Smith, Washington, D. C.; Miss Dorothy Black, Washington, D. C.; Mrs. Dorothy P. Cooper, Ocean View, Delaware, and Mr. W. Alderson Lynch, Ocean View, Delaware.

Minnesota State Fair Premiums.

The amount of \$540.00 is offered, to be divided as premiums to eight honey displays, the best that can be put up in the United States, for 500,000 visitors to see during State Fair week.

The exhibits will be in glass cases with approximately 5x8 feet floor space, two exhibits to a case. The exhibits must be at least four feet high, must contain 600 pounds of comb and extracted honey, and must be so designed that they will compel attention. There is no limit to individual ingenuity, decoration, or illumination. What the fair Board wants

is an exhibit that will attract the eye and compel attention. Mere piling up of honey will not do. A wonderful chance for advertising.

Premiums: \$100, \$75, \$70, \$60, \$50, \$40, \$30, \$20.

In addition to the above for best comb honey display: \$25, \$20, \$10. and also in addition for best extracted honey display: \$20, \$15, \$10.

An additional \$500 is offered for quality honeys. Write for printed prospectus.

Francis Jager,

Superintendent, Bee Culture, Minnesota State Fair, University Farm, St. Paul, Minn.

Bee Fever

I am a Methodist minister. You wouldn't believe it, would you? Well, I am, and have been for about fourteen years, but without deviating from the sacred path one whit, I am also profoundly interested in the bee, "The Busy Bee." And after all, it is not so far fetched from my profession, for if we only study them with careful eyes and thoughtful minds we may glean some wonderful pulpit lessons from them. Wonderful are their ways and methods.

Some one asked me "Are you not afraid of getting stung?" Well, there is not so much stinging going on around the busy colony as one might think. There isn't so much difference between the bee families and the human families. I have been stung by both, and about the only difference is one swells a little more than the other.

In the ministry if one presses the pocketbook of his parish members, he is apt to get plenty of kick out of it, and sometimes the stinging is most severe. On the other hand, if you use poor judgment with the bees, and press them too hard you will get the same results. So I am coming more and more to believe that the two occupations are closely knit.

I started in the game by helping one of my members with his bees. He has a right nice apiary, and the result was, I became more and more interested as time went on. Then he had the good American Bee Journal sent to my address, and that put the cap sheaf on the whole thing. I have been sold to the business ever since.

I now have eighteen stands, and they seem to be standing the winter fine. Every colony went into winter quarters last fall in fine shape, strong in numbers, and a very heavy supply of surplus.

I have learned one thing, unless you are keeping the swarms down, it is poor policy to have your bees very near the tall timber. I lost several swarms last spring that got so far out of reach I had to let them go. I tried shooting the limb off on which they were settled, but owing to the size of the limb this proved unsuccessful. I have moved them, however for the coming season; did this before packing them into winter quarters.

Rev. Don Whitmore, Iowa.



Let Your Product Shine Through



HELP to popularize Honey. Pack part of your output each year in glass and market it through the grocery stores of your community.

Think what it would mean if Beekeepers were to follow such a practice generally. It would be the equivalent of a national advertising campaign, and an increase in the demand for Honey would be sure to result.



Honey is its own best advertisement and the clear, fluted walls of "Diamond I" Honey Jars let your product shine through.



Specify "Diamond I" Fluted Honey Jars in ordering from your supply dealer---and be sure to get the national package, adopted as standard by the American Honey Producers League.

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No disease in our apiaries, and never has been. Safe arrival and satisfaction guaranteed on every package and queen shipped.

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Dr. Charles C. Miller, Apicultural Memorial Library

Although the library has accumulated considerable material, we are still in need of many things, and the beekeepers of America can help a great deal if they will aid us in locating and securing the following material. If you have any of this material to spare, send it in, or, if you know where some of it is for sale, please drop us a card:

"American Bee Journal," of which we need the first ten volumes.

"Beekeepers' Advance," printed at Mechanic Falls, Maine.

"Beekeepers' Exchange," printed by J. H. Nellis, Canajoharie, N. Y.

"The Beekeepers' Journal and National Agriculturist," printed by H. A. King, New York City.

"The Kansas Beekeeper."

"The Rocky Mountain Bee Journal."

"Pacific States Bee Journal."

"Apiculturist and Florist Guide," Des Moines, Iowa.

"The American Agriculturist."

"Bees and Honey," 1920 to 1923.

"The Beekeepers' Guide," A. G. Hill, Kendallville, Ind.

"The Booster," George Williams, Redkey, Ind.

"The Busy Bee," E. T. Abbott, St. Joseph, Mo.

"The Busy Bee," which started out in 1890, was run in 1906 as "The Modern Farmer and Busy Bee," 1899 to 1906.

"The Lone Star Apiarist," printed about 1902.

"Poultry Bee and Fruit Journal," Davenport, Iowa, about 1902.

"The Progressive Beekeeper," Higginsville, Mo., 1891-1906.

"Queen Breeders' Journal," Marlboro, Mass.

"Rays of Light," about 1885 to 1890.

"The Rural Beekeeper," River Falls, Wis., 1904-1906.

"The Southland Queen," Beeville, Texas, 1895 to 1904.

"The Western Bee Journal," Kingsburg, Calif., 1904-1905.

"The Western Beekeeper," Des Moines, Iowa, 1890-1894.

"The Western Honey Bee," 1913-1919.

Every beekeeper in America should be personally interested in the Dr. C. C. Miller Memorial Library, because it is a monument to America's dean of beekeepers, and Dr. Miller himself created so much valuable literature on bees that it is more than fitting that this memorial contain, if possible, everything written on bees.

Address:

H. F. Wilson, Conservator,
College of Agriculture,
Madison, Wis.

American Bee Journal

Inheritance In the Honeybee

By J. A. Munro.

IN the February 5, 1915, issue of Science, Wilmon Newell, of Texas, published results of his work on "Inheritance in the Honeybee." The article is chiefly an account of cross-breeding with Italians and Carniolans, together with some practical applications. A quotation from his article is as follows:

"Pure Italian queens mated to Carniolan drones produce workers and queens which are indistinguishable, so far as color is concerned, from the parent Italian stock; that is, in the F-1 generation of this, the primary cross, the yellow is completely dominant. In the reciprocal cross, in which Carniolan queens are mated to Italian drones, the yellow color is also dominant, but not as completely so as in the primary cross; the F-1 queens and workers show nearly but not quite as much yellow color as the parent Italian stock." He further states: "There is excellent evidence as to the inheritance of characteristics other than color. For example, the marked proclivity of the Carniolans to use wax instead of propolis in sealing crevices, etc., comes dominantly to the surface in the F-1 generation of the primary cross. In the F-1 generation of the reciprocal cross this trait is also much more in evidence than in the pure Italian bee, though not as completely dominant as in the primary cross."

The late F. W. L. Sladen, in an article, "Mendelian Methods as Applied to Apiculture," British Bee Journal, November 12, 1912, points out some very interesting observations he has made on the inheritance of color in queens, drones and workers. Mr. Sladen was a breeder of pure Goldens. He was of the opinion that a queen which produced all Golden had been mated to a pure Golden drone, and that progeny which

was intermediate (black and golden in color) were from a Golden queen mated with a black drone. In his examination of the worker offspring from about thirty "intermediate queens" he found that they consisted of Goldens, Intermediates and Blacks, thus showing that segregation of Golden from Black takes place. The proportion of the three types varied, but the Intermediates were greatly in excess of the Golden and the Black.

Mr. Gilbert Barratt, of England, reports in the October, 1920, issue of the Bee World that he has been successful in the artificial fertilization of drone eggs. He stated that "freshly laid drone eggs from a pure Golden queen were secured. Each egg was touched with a camel's-hair pencil previously dipped in sperm secured from a mature drone. The eggs were placed in an incubator maintained at 97 degrees Fah., and the next day a little royal jelly slightly thinned with honey was added with a hair pencil, again on the third day, and on hatching were further fed with royal jelly for two days. The larvae were transferred to artificial cell-cups and placed in a queenless and broodless colony. They were accepted, capped over and resulted in perfect queens," which, he stated, "proved that the male spermatozoon had entered the micropylar aperture of the egg and produced fertilization." Mr. Charles W. Quinn, of Powhatan, Va., states that he has confirmed the work of Barratt on artificial fertilization of drone eggs by making use of Mr. Barratt's methods along that line.

During the past season (1924) the writer conducted observations on several colonies of bees, with a view to collecting further data on inheritance in the honeybee. An examination

was made of 174 workers, the progeny of a Carniolan queen mated with a drone in the vicinity of the apiary of the Kansas Agricultural College. The results would indicate that the drone was of yellow color. The workers were divided into four classes, as follows:

One hundred and twenty-nine had yellow scutella and were three-banded.

Twenty had yellow scutella with the rest of the body black.

Four had black scutella and were three-banded.

Twenty-one had black scutella and the rest of the body black.

It is evident from the above that the drone which mated with the Carniolan queen was a Cyprian drone. The main color characteristics of the Cyprian as regards color is yellow scutellum and yellow banding of the dorsal segments of the abdomen. Newell observes that the yellow color factor is dominant in the F-1 generation of a cross between Italian and Carniolan. If the yellow color in the scutella had been absent in the above, it would be evidence that the drone was an Italian. Italians do not have the yellow colored scutella. The fact that all of the workers did not have yellow scutella and the three-banded characteristics may be due to other causes, over which it would be rather useless to speculate at the present time.


In two other colonies, which may be designated as Hives No. 1 and 2, both workers and drones were examined regarding color and were also weighed. To prevent the possibility of stray drones entering the hives, and to catch the drones for examination, drone traps were kept over the entrances. The following tables will illustrate the points observed:

HIVE No. 1				
(Drones)				
Color pattern. Scutellum	Body	Number	Weight	Weight Ave. Weight.
Black	Black	52	8.8616 gr.	.17232 gr.
Black with trace of yellow	Black with trace of yellow	5	.6324	.12648
Intermediate	Intermediate	35	4.4433	.12695
Yellow	Yellow	15	1.8194	.12129
(Workers)				
Black	Three-banded	69		.0628 gr. *
Black with trace of yellow	Three-banded	108		.0622
Intermediate	Three-banded	120		.0633
Yellow	Three-banded	61		.0697
* The weighings of this group were delayed, but this would not affect the relative weights of the different classes.				
HIVE No. 2				
(Drones)				
Black	Black	922	164.7480	.17868
Yellow	Yellow	120	13.8860	.11571
(Workers)				
Black	Three-banded	34	3.3739	.0995
Black with trace of yellow	Three-banded	76	7.5698	.0996
Intermediate	Three-banded	33	3.2109	.0973
Yellow	Three-banded	43	4.1069	.0955



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AMERICAN BEE JOURNAL, Hamilton, Illinois

The above tables indicate that a correlation exists between color and weight in the drones, whereas this is not evident in the workers. The drones which have yellow in their makeup are lighter in weight than the ones which are black. I believe that this might be explained by the fact that the drones have the haploid number of chromosomes, whereas the workers have the diploid number. If the yellow color factor alone stunts the growth of the individual it would have full opportunity to act on the drones, since they have only the half set of chromosomes. The workers having the yellow factor for color would also have the factor for black, but since it is recessive it would not be noticeable except that it might offset the stunting effect of the yellow factor for color. It would be very improbable for a yellow undersized drone of the above type to mate with a queen, since it is only the vigorous drones which are swift on the wing that mate with the queens.

A further study of the tables shows that the three-banded characteristics showed in all the workers. The yellow scutella only showed completely in about one-fourth of the workers and the rest varied from black to black with traces of yellow in their scutella. This would indicate that the yellow in the scutellum is not inherited in the same way as the yellow color in the rest of the body.

During the summer of 1924, fifteen workers were received from Mr. C. W. Quinn. All fifteen had yellow scutella and were three-banded, resembling Italians, except that they had yellow instead of black scutella. Mr. Quinn stated that they were the progeny of a Carniolan queen mated to a Cyprian drone.

Honey Trade In Dunfermline

By H. D. Van Sant,
American Consul.

Owing to the continued wet season during the summer of 1924, there appears to be a serious decrease in the honey production of this district and in Scotland, with prevailing scarcity and higher prices.

The Lowland clover honey offered in this market seems to be limited in quantity, several of the fruit and honey dealers stating that they are thus far unable to fulfill the orders obtained from customers in the fall months. The clover honey combs obtained by a few of the shopkeepers are not more than half filled and the quality is not up to the standard of better seasons.

The situation is no better with the superior Highland heather honey thus far offered here, the honey combs being but partly filled on the average and the honey so thin that it does not hold firm in the cells as in brighter seasons. The heather honey is the favorite honey in Scotland and is usually considered as possessing medicinal properties, being very popular with invalids and dyspeptics. The clover was at first offered at 60 cents per pound in partly filled combs in light wood frames, the price having recently been increased to 75 cents

per comb or pound. A year ago this honey with well filled combs and in fine condition was selling at five shillings per pound frame, the crop being soon exhausted at this figure.

As this summer's supply is already approaching exhaustion, shopkeepers here state that there should be a good market for American honey in Scotland during the late winter and spring months, if American honey exporters are able to ship comb or other honey to the wholesale dealers in the large cities of Scotland in the meantime. Direct shipments to wholesale honey dealers would save middlemen's profits and keep the price at a saleable figure for the consumer. The small shopkeepers here handle a limited supply weekly and prefer to deal directly with the wholesale honey distributors in Glasgow or Edinburgh. Honey is becoming a popular diet of food in Scotland and the consumption of it would probably increase with an ample supply on the market.

The names of the principal honey sellers in Dunfermline are:

Messrs. Fraser and Carmichael, wholesale.

Messrs. Alston & Co., wholesale.

Messrs. Scott and Allan, retail.

Mr. H. Hutt, retail.

Allan's Fruit Shop, retail.

The Dunfermline Co-operative Society, wholesale and retail.

The executive council of the Fife-shire Beekeepers' Association holds monthly meetings usually at Cupar, the county seat. At a meeting held there on Saturday, November 29, 1924, a resolution was adopted in support of the scheme for inspection of hives and instructions to beekeepers during the summer of 1925 by touring experts, on lines suggested by Mr. John Anderson, of the north of Scotland college of agriculture at Aberdeen.

The colleges of agriculture in Scotland are interesting themselves more closely than ever before in the matter of bee culture, and renewed efforts to extend the honey producing districts are being manifested in both the highlands and lowlands.

That Car Load of Bees to Manitoba

By L. T. Floyd, Winnipeg.

IN the February issue of the American Bee Journal, page 42, the editor mentions a shipper of bees to the Province who last season got away with \$2500 for which he gave no returns. Here are the facts:

When I came to the Province, four years ago, this man was doing a flourishing business. He was a very good shipper of nuclei, but a very poor shipper of packages.

When we began to work up an interest here, he lost no time in placing advertising in the official organ of our association, and in the agricultural press.

We received several warnings that sooner or later we would be sorry if we had anything to do with him. But from many quarters came statements that he had given good service for years. After several attempts at warnings at conventions there was always someone to defend him, so his advertising was not cancelled and a waiting policy was adopted. In the second year he decided to come up and establish an apiary and sell full colonies as well as nuclei.

He made a partnership arrangement with one who was altogether reliable and who promised, if anything went wrong, that he would make good.

The second summer, while he was working the yard up here, letters came in from parties who had paid for colonies to be delivered in the spring. They were suspicious and asked for information. However it was decided not to disturb him at the time, and he went south in November. Before leaving, he quarreled with his partner and they settled their differences in court. Then he took another partner, to whom he turned over his bees, equipment and motor trucks, and prepared to do a larger business than ever. He was

not satisfied with taking orders for one car of bees, but aimed to ship in two cars. These were to be shipped in full colonies and nuclei.

By that time he and his partner received notice that their advertising would be cancelled. Their indignation knew no bounds. Each publishing office was visited and the blame nailed upon the Provincial Beekeepers' Association. When it was ascertained that this association was willing that the matter should be aired in a public way, the question was dropped.

Then came the annual meeting; and the legislation for prohibiting the importation of bees on combs was sustained by these people as well as by the association; they did not anticipate that the law would be put in force before the time came for shipping the bees.

However, the announcement was made that the bees would come in packages, that they would be given a rest in Winnipeg and again re-shipped to the customers. This looked to us like an impossibility.

Two thousand packages were reported coming, but finally a telephone message from the office and a trip to the customs evidenced the fact that there were only 800 packages, that the expressage was \$1200 and that they were all piled in one end of the car and some packages suffocated.

In the suburbs of the city some six hundred hives, arranged in rows near one of the principal thoroughfares, made an imposing sight, and permission to take photos was clamored for by the newspapers. But few of these were used. They were later traded for local bees to fill some of the waiting orders.

The cash for all these orders had been deposited in a Winnipeg bank in the name of the southern shipper.

So, after the car arrived, he was permitted to draw the full amount and went south to finish the shipment. But nothing more arrived.

Shortly after his departure a few letters reached the office complaining that his partner would not reply to letters. A few telephone calls reminded him that his promises would have to be carried out. They were, and every case was settled satisfactorily, although it cost the partner about \$2500.

A few lessons have been learned, so that some value has been received out of the experience:

1. There is little difference between the payment of the cash before the packages are shipped and the deposit of the cash in the bank in the name of shipper until the bees arrive. When it is deposited in the name of the shipper he is as sure to get it as if it was in his pocket, as it can be withdrawn only on his signature.

2. It is not worth while to take chances on a shipper with a bad reputation, even if his prices are so much lower than others. There are plenty of shippers of proven ability and integrity.

It is but fair to state that, even if the venture had been on the square, there could have been but little profit, as the death rate of the bees, because of poor management, was too great.

It is evident that, in order to ship packages that will stand the trip, it is necessary to have the finest kind of organization at the point of shipment, or the delay in packing will be fatal.

It is better that one concern should lose \$2500 than that a like amount be lost by hundreds of small beekeepers, scattered all over the Province, as would have been the case had not the loss been guaranteed by a reliable man at the point of delivery.

Michigan Meetings.

Three district beekeepers' meetings have been arranged to precede the 7th annual summer meeting of the Michigan Beekeepers' Association, to be held at East Jordan, August 4-5.

The southeastern Michigan meeting will be held July 28th at the apiary of L. C. Retan, Fairfield, and July 29 at the apiary of Floyd Markham, Ypsilanti.

The Thumb district meeting will be held at the apiary of Mr. O. H. Schmidt, Bay City, R. No. 5, July 31.

The Seventh Annual Summer Meeting of the Michigan Beekeepers' Association, which is to be held at East Jordan, August 4-5, promises to be one of the best ever.

Mr. Ira Bartlett is making arrangements for the annual banquet and tour of inspection on the first day. Mr. H. M. Krebs is making the arrangements for the two-day auto tour of inspection of adjacent territory which has been subjected to area clean-up campaign methods for three years. The tour will be held August 6-7, following the summer meeting.

Russell H. Kelty.

Paddock Makes International Beemoth Study

By Harold L. Harris.

ARISTOTLE mentioned beemoths in his writings on agriculture. How long before Aristotle's time these pests had been prevalent we cannot tell, but we know that they have been a source of annoyance ever since.

The surprising thing is that during more than two thousand years practically nothing had been done, and little attempted, in the study and control of this pest until Prof. F. B. Paddock took up the work and published the first bulletin on the moth in 1913.

At that time Professor Paddock was state entomologist of Texas and his study was limited to one of beemoth conditions in the Lone Star state. This work was continued and in 1916 a revised and enlarged edition of the beemoth bulletin was published.

Questionnaires covering the life history, distribution, spread, control measures, and extent of damage done by beemoths, have been sent out to beekeepers in practically every country in the world.

For a brief summary of the beemoth information which has been gathered through this survey so far, we can do no better than quote from a paper which Professor Paddock has prepared and called "International Notes on the Beemoths." He says:

"The distribution of the pest is exceedingly interesting. We would expect to find it in the southern European countries, but it was reported from Sweden, northern Russia and the province of Ontario in Canada. Within the geographical range of the pest the distribution is quite general in the various regions. There are one or two possible exceptions. For instance, in Austria and Hungary the pest is not found in the greater altitudes of the mountainous areas. This same condition has been observed in the distribution of the pests in the United States. In Colorado, Wyoming and Montana they seem unable to persist at altitudes above 4000 feet.

"The beemoth was recorded in Italy at the time of Aristotle, about

300 B. C. In Hungary, one correspondent tells us, it was reported with remotest antiquity, and in Austria it is recorded as known for centuries. We would assume that this pest followed in the footsteps of the western spread of the beekeeping industry. In Germany it is recorded about the year 1500 as the first date for this pest, whereas in Sweden the first record is about the year 1700.

"In European countries where skeps are the rule this pest is not necessarily correlated with the immovable frame hive, for in those countries a more careful type of beekeeping is conducted where bees are kept in skeps. The correlation is with the indifferent beekeeping and not with the type of hive, in the opinion of most European correspondents. There is considerable difference of opinion as to the correlation of this insect with the black race of bees. In Europe the prevailing opinion is that the color of the bee plays no part whatever in the prevalence of the beemoth, while throughout Great Britain and North America the feeling is that there is a very positive correlation between the continued presence of this pest and the black bee.

"Perhaps the greatest difference in replies was in regard to the life history of this pest. This may be due to the fact that the life history has been but little studied in the various countries, or it may be due to a peculiar life history which allows for a considerable overlapping of broods.

"At the present time the remedies used are more or less standardized. In every case strong colonies are recommended and recognized as excellent, and when this work is carefully done the rest of the measures must be directed toward stored combs. For this purpose fumigation is more frequently used than any other method.

"It is intensely interesting to learn that the lesser beemoth is nearly always present with the greater, and in every case there seems to be confusion by the rank and file of beekeepers concerning the correct identification of these two pests. Through-

out southern Europe the lesser beemoth is a more serious pest than the greater, although in Europe the smaller species is not as much a pest of stored combs as is the case in North America."

We are able in this article to give only a very general outline of the information which Professor Paddock has gathered through his effort, but were we to present that information in fullest detail we should still be leaving untouched an important and certainly the most interesting part of the whole survey—the many sidelights which have been brought out through the letters that practically always accompany replies to questionnaires.

In a recent reply from Huelva, Spain, a beekeeper, from whose name we conclude that he was originally a Britisher, tells Professor Paddock that he is living in the most backward part of one of the most backward countries of Europe. He points out that infant mortality in that country is 75 per cent and illiteracy 80 per cent among the people, "while the rest just sign their names by a scrawl and read only by the aid of one finger, so you can see what beekeeping is up against here." The moth is the beekeeper's worst enemy in that region, he says, and has always existed. The bees used there are black, very much like the English black bees, and are kept mostly in cylindrical hives made of cork. A few are kept in straw skeps.

A German scientist, who was inter-

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Cottonwood, California

MOST NORTHERN BREEDER IN CALIFORNIA

Knight's Line-Bred

Pure Three-Banded
Leather-Colored Italian

QUEENS

For hardiness, prolificness, gentleness and honey gathering qualities they cannot be excelled. Several northern beekeepers inform me my queens cleaned them of European foulbrood last season, enabling them to secure a honey crop.

All queens guaranteed mated pure, and to give perfect satisfaction. Can still make immediate shipment two-pound packages bees with queens, price \$5.00 F. O. B. buyer's address.

Prices. Select (one grade) untested

1 to 4	\$1.00 each	10 to 14	.80 each
5 to 9	.90 each	15 and more	.75 each

JASPER KNIGHT, Hayneville, Alabama

PACKAGE BEES

nationally prominent before the great war, in answering his questionnaire, reflected very clearly the changed conditions when he wrote: "Please always add stamps for answering, or, better, an international reply coupon. Germany is a poor land now and we cannot afford the postage to foreign countries. It is three billion of marks now."

A correspondent from Chile, S. A., an old-time Britisher, describes the methods of beekeeping practiced by the Indians of that country. They saw off trees for hives. One Australian beekeeper wanted all the available information on the importance of the stingless bee in the United States. Another asked for detailed information on river beekeeping as it is practiced in some parts of Florida, where the apiary is situated on a raft which is floated up or down the river according to the location of bloom. This particular correspondent believed the practice would be applicable to certain parts of Australia.

Beekeepers and entomologists all over the world have been very willing to help Professor Paddock in this work, and some of them are taking a very active part in the promotion of the survey in their own countries. One Scotchman made duplicates of the questionnaire which he received and sent them to twenty-two of his friends, and now he is forwarding the replies to Ames as they are received.

A Brazilian professor, a member of the liberal arts faculty at the University of Sao Paulo, translated the questionnaire into Portuguese and published it, along with an article on the beemoth, in a leading Brazilian agricultural journal. He translates and relays the information which he gathers to Professor Paddock and also sends specimens of the moths found in that country.

Professor Paddock hopes to resist the temptation to be sidetracked in this survey, for four or five years yet, when he plans to publish his findings in bulletin form, along with adequate control measures for this age-old pest of the apiarist.

Many Beekeepers to Visit the Thousand Islands

The annual meeting of the Empire State Federation of Beekeepers' Co-operative Association, Inc., is always held in the City of Syracuse, the second Tuesday in December, usually a three-day meeting; this year on December 8, 9 and 10. However, the beekeepers of the eastern part of the United States are looking forward to the summer meeting and picnic of the Federation which is to be held at the home of A. A. French & Son, of Theresa, N. Y. This apiary is located on the main highway leading south from Watertown. There are leading beekeepers of the state in this vicinity and many will avail themselves of the opportunity to visit the Thousand Islands, the following day. The meeting will be held Friday, August 7.

Leon E. Hall, Secretary.

Golden Queens and Banded Bees

Untested queens.....\$1.00 each
Tested queens.....1.50 each
Bees.....\$1.50 per lb.
Nucleus.....\$1.50 per frame
Bees inspected; free from disease.

J. W. SHERMAN
Valdosta, Ga.

Package Bees

Hardy Northern Bees.
July and August Sale:
2-lb. package with queen, at \$4.00
3-lb. package with queen, at \$5.00
Safe arrival and satisfaction guaranteed.
Illustrated circular free.

VAN'S HONEY FARMS, Hebron, Indiana.

BIG, BRIGHT, NORTHERN BRED ITALIAN QUEENS

Bred for beauty, gentleness and honey-gathering qualities.
Delivery begins June 1. Untested, \$1.00 each.

M. P. LE MUNYON
R. D. No. 3, Cassopolis, Mich.

QUEENS

*Pure Three-banded Italians
Bred for Business*

Our output has been greatly increased. No order too large for consideration; none too small for prompt attention. We strive to excel in queen-rearing and service. No disease.

PURE MATING, SAFE ARRIVAL and SATISFACTION GUARANTEED

UNTESTED
(CHOICE QUEENS ONLY)

65c each
\$55 per 100

Select untested, 20c each additional; tested, \$2.00. Breeders, good as any, \$5.00.

Jensen's Apiaries
Crawford, Miss.

QUEENS

SUMMER PRICES 1925

1 untested	.....	\$ .75 each
25 untested	.....	.70 each
50 untested	.....	.65 each
100 untested	.....	.60 each
One tested	.....	1.50 each
Extra select tested	.....	3.00 each

PURE THREE-BAND ITALIANS
D. W. HOWELL, Shellman, Ga.

PRICES SMASHED MR. BEEKEEPER QUEENS BY RETURN MAIL

Now is the time to requeen. Note these prices. These queens are reared by men who know how. I have the equipment and experience necessary to produce queens and bees. Three-banded Italians only. Safe delivery and satisfaction positively guaranteed.

PRICES

1 or 1,000 untested queens	.....	60c each
1 or 1,000 select tested queens	.....	70c each

The home of the Good Queens. Ask your beekeeping friends.

THE FARMER APIARIES, Ramer, Alabama

Queens For Requeening

Forehands

3-Bands

The best is the cheapest. They satisfy; why? Because a lifetime has been spent in breeding QUEENS OF BETTER KIND.

Untested 1, 80c; 10, 75c; 100, 70c each

Safe arrival and perfect satisfaction guaranteed in the United States and Canada.

N. FOREHAND, Gonzalez, Florida

Achord Queens

Splendid honey producing Italians. Reared in one of the largest, best equipped queen rearing and package shipping establishments in the South.

Select young laying queens, untested, 75c each. Any number. Tested queens, \$1.50 each. Any number.

Promptly mailed to you in large mailing cages with 1925 inspection certificate. Safe arrival guaranteed.

W. D. ACHORD

Fitzpatrick, Ala.

MOTT'S NORTHERN BRED ITALIAN QUEENS

Select untested, \$1.25 till June 1st, \$1.00 each thereafter. Select tested, \$2.00. Virgins, 50c. Michigan borders onto Canada. Save the long trip. No disease. Satisfaction and safe arrival guaranteed. Selected queens only.

E. E. MOTT,
Glenwood, Michigan.

COX'S GOLDENS

Untested queens from now to July 1, \$1.00 each, or 6 for \$5.00; 50 or more, 75c each. One pound of bees and queen, delivered, \$3.00; 2 pounds and queen, delivered, \$4.25; 3 pounds and queen, delivered, \$5.50. I guarantee safe arrival on everything I ship, and prompt service.

R. O. COX, Rutledge, Ala.
Telegraph Luverne, Ala.

Queens---\$60 per 100

Production Bred Italians

Requeening time is near at hand. Here is an opportunity to get some fine young queens into your colonies at prices you can afford to pay:

1 to 50, 75c each; 50 to 100, 60c each.

I guarantee them to be first-class and to please you in every way or money refunded.

Connecticut Valley Apiaries

A. E. CRANDALL, Berlin, Conn.

A Plea For the Poor Stunted Worker

By Francis Jager.

I COULD never understand why bee books and bee journals call a queen a perfect female and a worker bee a stunted female.

The queen is far from being a perfect female. She has no honey sack, no wax glands, no pollen baskets, no glands for chyle secretion, no instincts to gather nectar and pollen, and other accomplishments of which the "stunted" females can boast, not to mention her brains, which are smaller than the workers. Still we call her a perfect female.

Other writers put much stress on the fact that she is the "only" mother of the colony, and call her for that reason a "perfect" female. Now we all know that she lays all the eggs in a normal colony, but she cannot incubate her eggs, nor keep the brood warm, nor feed the young. This "perfect mother" cannot produce self-supporting individuals alone, but again, only the workers may be called stunted females; the queen is perfect.

Motherhood means two things: To bring forth offspring, and after that to feed it and protect it until it becomes self-supporting, if it is not self-supporting at birth, as in the case of bees' eggs. In bees the queen bee brings forth the eggs and that is all she does; the workers hatch them, feed the larvæ and produce mature bees. Thus queen and the workers co-operate in the production of brood 50-50. Neither is a perfect female, but by a "division of labor law" they divide the motherhood between themselves as one perfect co-operative female. We all know how the little workers go out and forage for pollen, how they look for and gather nectar, how they produce chyle, or bee milk for the young, how they love their brood, protect and cover it. Displaying all these motherly instincts toward their helpless brood, who does not see that the female, motherly instinct is in them just as strong as it is in the queen.

Moreover, the workers have developed from queens. The prototype of the bees in ages gone by was the queen. Shall we then suppose that in the course of time these little workers have lost all their femininity and motherly instincts, especially when we know that in case of need they may even now take over the queen's part of motherhood as far as able and lay eggs?

Now let us give the poor worker her due honor and dignity. The motherhood of a colony is a co-operative affair, the queen and workers being the unit of production of brood. Like all other instincts, motherhood is a community instinct and a community activity. It is the colony that raises brood, and our incorrect talk of perfect and imperfect females in bees is flattery to the queen and injustice to workers, it is based on superficial observation, it is wrong

bee philosophy, which we ought to correct.

(I believe that most of our writers agree in giving each their due. Bevan calls the worker a "sterile female." Cook, Cowan, Phillips, etc., call her "undeveloped female.")

Langstroth wrote that the workers are "females whose ovaries are too imperfect to admit of their laying eggs."

Cheshire wrote, page 213, that the queen "is almost in every point the inferior of the worker."—Editor.)

Honey Week In New York

By J. G. Milgram.

Honey Week, November 16-23, received in New York the co-operation of the New York State Department of Farms and Markets, which, working with beekeepers and honey distributors and all the other state departments of similar character, bent its efforts toward introducing honey to those consumers who know so little about it.

And in addition, the observance of the week honoring the product of the bee received the aid of Alfred W. McCann, advocate of pure foods and natural foods.

Mr. McCann, whose articles on pure food have appeared in *Physical Culture*, *Strength* and other athletic papers, and who now syndicates his pure food articles through a number of newspapers, is one of the best friends honey has in the United States.

Commenting on the observance of Honey Week, Mr. McCann lapsed into quotations from the Bible, showing that honey is an ancient delicacy and food, thousands of years old.

Speaking of Honey Week, Mr. McCann said:

"This is good news to me, for I have been conducting Honey Weeks sporadically for the last ten years. I have brought honey to New York by the carloads in all sorts of packages, thousands of which weighed 60 pounds each.

"During the period of six weeks readers of the old New York Globe purchased more than 400,000 pounds (200 tons) in these bulk containers. Moreover, the honey was candied. Nearly all the purchasers tried to get more but couldn't.

"On another honey jamboree, nearly twice as much, or about 385 tons (three-quarters of a million pounds) were sold in 5-pound packages. This honey also was candied.

"Then came the 2½-pound tins of liquid orange blossom honey from the groves of California. This honey used to be scattered all over the earth. Last year practically the entire crop came right here to the Metropolitan district.

"At any rate, the various demonstrations in which millions of pounds of honey, liquid and candied, had

figured, indicate that every week should be honey week, and would be if the people only knew the virtues of honey.

"Notwithstanding all the evidence of consumer demand, the only honey distributor I was ever able to seriously interest in bringing honey in a happy form to the public was the John G. Paton Company of New York. Through the efforts of this company, the Golden Blossom honey is now within the reach of everybody.

"Golden Blossom is a blend of New York State's finest honey, with the Orange Blossom of California, of which this year's crop was a calamitous failure as far as quality is concerned.

"One need not argue the virtues of honey. The wonder is that the human family has ever been tempted to ignore them, for the reason that honey harks back beyond the Old Testament days. In fact Holy Writ contains so many gems of beauty to show how the nectaries were cherished under the Mosaic law, that it is difficult to understand why State Honey Weeks or National Honey Weeks should now be necessary to revive the interest in this generation in a sweet which has been cherished for so many thousand years.

New York.

Bees In the Philippines

There has long been talk of introducing the honeybee into the Philippines. Apparently it has at last been accomplished by Leo. F. Hannagan, of Manila. At first thought the difficulties of establishing a new industry will hardly be realized. No supplies are available except from a long distance. There is no market for a product which is not familiar to the inhabitants, and little is known of the sources of nectar. However, in a region so rich in natural resources as the Philippines there can be little doubt of the success of the venture. The rich flora of the islands will probably support large apiaries, and once the people become familiar with honey the product will be in demand. Since large quantities of honey are shipped successfully from Australia and New Zealand to European markets, there would seem to be no reason why the Philippines cannot develop an equally successful export business.

The work of the pioneers in any essential industry is more appreciated later than by the people of their own generation. Hannagan and those who assist him in establishing beekeeping in the islands are doing something which is likely to prove of far greater importance than is now realized. When we remember the immense contribution that the introduction of the honeybee made to the wealth of New Zealand we get a glimpse of what it may later mean to our own far-flung provinces.

The American Bee Journal wishes a large measure of success to the enterprise.

SEASON 1925

Pacific Citrus Honey Company

Office 221 Chancery Building, 564 Market St., San Francisco, Calif.

PRICES—QUEENS

Three Banded Italians

1—Mated, untested, \$1.00; 6 for \$5.00; over 12, 70c each.

PACKAGE BEES

In 2-pound packages.

1 to 10 -----at \$2.50-----with queens at \$3.50
10 to 100 -----at \$2.00-----with queens at \$2.50
Over 100, with queens-----\$2.25

Large orders will be given special quotation.

Terms cash—10 per cent with order, balance before shipment.

WANTED More Western Beeswax

To supply the greatly increased demand for our new "SUPERIOR" HEAVY DUTY FOUNDATION. Drop us a card and we will quote you price either f. o. b. your station or f. o. b. Ogden, Utah. Many of our friends ship their beeswax to us each year without writing, knowing that they will get a square deal. All beeswax should be shipped to us at our factory at Ogden, Utah.

Superior Honey Company Ogden, Utah

HONEY CONTAINERS

2 1/2 lb. cans, per carton of 100	\$4.00
5 lb. pails, per carton of 50	3.50
5 lb. pails, per carton of 100	6.75
10 lb. pails, per carton of 50	5.00

Write for prices on lithographed pails

Above packed in cartons which are dust proof, light and easy to handle, keeping your cans and pails clean until you are ready to use them.

5 lb. pails, per case of 12	\$1.10
10 lb. pails, per case of 6	.90
60 lb. cans, 1 per case	.90
60 lb. cans, 2 per case	1.25

Above packed in wooden reshipping cases

GLASS JARS

8 oz. honey capacity, Tall or Fluted, per case of 24	\$1.05
16 oz. honey capacity, Tall or Fluted, per case of 24	1.35
32 oz. honey capacity, per case of 12	.95

All above prices F. O. B. Reedsville, Wisconsin

Write for prices on large quantities of pails and glass jars, stating number and sizes wanted

SECTIONS

4 1/4 x 4 1/4—1 1/2 in. Plain No. 2, per 1000	\$7.50
4 x 5—1 1/2 in. Plain No. 2, per 1000	8.00
4 1/4 x 4 1/4—1 1/2 in. Beeway No. 2, per 1000	9.00

SAVE MONEY—on your supplies by getting our quotations on your requirements

A. H. RUSCH & SON CO., Reedsville, Wis.

—QUEENS OF—
Moore's Strain
 OF ITALIANS PRODUCE WORKERS

That fill the supers quick
 With honey nice and thick
 They have won a world-wide reputa-
 tion for honey-gathering, hardiness,
 gentleness, etc.
 Untested queens, \$1.00; 6, \$5.00; 12,
 \$9.00. Select Untested, \$1.25; 6,
 \$6.00; 12, \$11.00. Safe arrival and
 satisfaction guaranteed. Circular free.
J. P. MOORE, QUEEN BREEDER,
 Route 1, Morgan, Kentucky.

Thrifty Queens

50c

each in lots of 10 or over.
 Smaller lots 60c each.

We can make prompt shipment.

Safe arrival is guaranteed in the
 United States and Canada. Pure
 mating and satisfaction the world
 over.

Thirty-three years of careful
 breeding assures you of good queens.
 An output of thousands of queens
 per month insures you of the best del-
 ivery.

Wire us your rush orders.

W. J. Forehand & Sons
 Fort Deposit, Ala.

Substantial Reduction In Price

With the same standard of Quality
 and Service.

One untested Italian Queen, 65c;
 ten or more, 60c each.

Tested Queens, \$1.50 each.

Safe arrival and satisfaction guar-
 anteed.

JNO. C. HOGG
 Ramer, Alabama.

Their Cleansing Flight

By Johnson McFetridge.

AFTER a trial flight on a spring
 day, an aeroplane is dirty, oily
 and greasy, while a honeybee
 is clean inside and out.

In the suburbs of Washington,
 D. C., very near Bolling Aviation
 Field, lives a German family of the
 name of Loeffler, the father a me-
 chanic in the Navy Yard, and the
 mother an innocent, loving home-
 body with still a suggestion of the
 Fatherland in her voice. Again there
 are the two daughters, one married
 and the other willing to be, but who
 do not enter into this narrative.

February 20 was an ideal day for
 a cleansing flight of Mr. Loeffler's
 bees, but from a recent bee journal
 he had read that bees flying out on
 warm days during the winter search-
 ed the barren fields and came home
 to the hive to consume more honey
 than if they had not gone forth.
 Being of a practical turn of mind,
 he decided that he would make a
 cage of four sides of window-screen-
 ing so that they could come out but
 not fly over two feet at the most. He
 next placed the screening cage in
 front of the hive one evening, and
 the next evening, returning from
 work, he was surprised to find them
 hanging out on the sides of the
 screening.

Now, Bill Loeffler lives down the
 street from me, and knowing that I
 have several colonies of bees, he
 came up to my place on the pretense
 of helping me put a super together,
 but after chatting awhile he claimed
 that his bees were "hanging out".
 After questioning him as to what he
 had done, he described the screening
 stunt and I told him that they needed
 a "cleansing flight" after being
 "snowed up" for two weeks or more,

and that as soon as it got dark he
 should remove the screen so that the
 next day they could take a flight.

Anyone who is halfway interested
 in beekeeping knows that in a cleans-
 ing flight the bees are in the air
 eight or ten feet before they "pass
 off" or "drop" anything, as I told
 Bill. Well, this particular day was
 considered an ideal day for Mrs.
 Loeffler to hang out a very respect-
 able size wash of sheets and linen,
 and from the looks of it, after the
 bees passed over it back and forth
 that day, it was agreed that this
 wonderful housekeeper would have
 to wash them again. But this didn't
 let Mr. Loeffler down so easy, for
 when he came home she certainly
 "lit into him", and demanded the
 immediate removal of his pets to
 parts unknown. After a complete
 survey of the wash and the surround-
 ings, in which an aeroplane swooped
 down over the housetops, he went
 into the kitchen to calm the wife.

"Villie, you know dot's not right,
 dot you should make me haf to do
 dot wash ofer again. Dose pees vos
 a noosance aroundt here, so you
 chust tak und give dem away. I
 dondt care vich you sell dem oder
 giffs it away. Dey made dose mess
 ondt dose glean sheets, and I vondt
 haf dot, you hear?"

"Nix! Frieda, dose little bees didn't
 done dot! Dot's oil undt grease," he
 exclaimed.

"Vot!" with surprise, "you maype
 now tell me dot dey fix dere vings
 mit oil und grease yet?"

"No! No!" he answered, "oil und
 grease from dere airblanes; all der
 neighbors vos complainin' about it."
 And for all I know, maybe he was
 right (but I doubt it).



"Villie, you know dot's not right, dot you should make me haf to do dot vash ofer again."

Seasoning the Hive In Which A Swarm Is To Be Put

By Charles Butler (1534)

In swarming time, season the hives that you mean to use, rubbing them with sweet herbs such as the bees love, such as Tyme, Savory, Marjoram, Baulm, Fennel, Hysop, Mallows, Bean-tops, &c. And when the swarm is settled take the hive that you think fit for it in bigness, and with a branch of Hazell, Oak, Willow, or any other of the fore said herbs (but chiefly with a sprig of that tree where on the swarm lighted) wipe the hive clean; and then dipping it into Met (metheglin), or fair water mixed with a little Honni, or with milk and salt, or for a neede, with salt only, besprinkle the same.

But if the hive have been used before and you think the former dressing will not make it sweet enough, then (after you have pared away the wax as clean as may be) let a hog eat two or three handfuls of mault, or peas, or other corn, in the hive; meanwhile do you so turn the hive that the fom or froth, which the hog maketh in eating, may go all about the hive. And then wipe the hive lightly with a linen cloth: and so will the bees like this hive better than a nue. But besprinkle it also, when you do use it, as is shewed before. And so serve a nue hive, when the bees are so froward, that they will not otherwise abide. — (Page 38, Chap. 3.)

Alabama Also

In April the State Board of Agriculture adopted an amendment to the state apiary inspection law prohibiting the shipping of bees on combs into the state.

When the state law was passed such restrictions were not thought necessary. During last winter a number of apiaries were moved in, the owners furnishing a certificate of inspection. When these apiaries were inspected this spring they were found to be infected with both European and American foulbrood. As soon as this was reported to the state board by the inspector they passed the ruling prohibiting the further shipment of bees into the state on combs.

Fortunately those apiaries were not in reach of the queen breeders and package shippers.

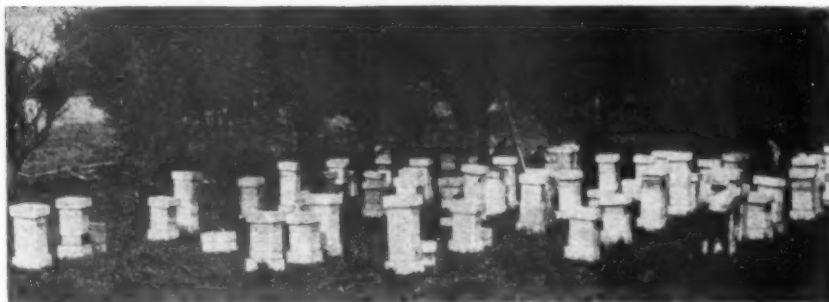
Death of R. F. Holtermann

Mr. R. F. Holtermann, of Brantford, Canada, died on June 10th. He was 67 years old. We have on hand an article from him which is to appear in our August number. A biographical sketch will also appear at that time.

King County (Wash.) Meet

The King County Beekeepers' Association, of Washington, will hold a field meeting and picnic at the home of A. O. Jeffries, Kent, Washington, July 4.

ROOT QUALITY BEES ARE HONEY GATHERERS



One of our twenty apiaries at Medina, Ohio, photographed August 1, 1924.

ROOT QUALITY QUEENS

Prolific—Vigorous—Gentle—Hardy—Three-banded	Italians—Uniformly marked.
Queen Prices	Quantity—1 to 9 10 to 24 25 to 49 50 to 99 100 or over
Untested.....	\$1.50 ea. \$1.35 ea. \$1.25 ea. \$1.10 ea. \$1.00 ea.
Select untested.....	2.00 1.80 1.70 1.65 1.45
Tested, \$2.50 each. Select tested, \$3.00 each.	
Write for prices on package bees. Buy the Best. Shipped direct from Medina.	
THE A. I. ROOT COMPANY, Medina, Ohio, U. S. A.	

Cut Your Shipping Costs

The Hawkeye Corrugated Comb Honey Shipping Case saves money for the progressive beekeeper.

Economy in initial cost plus added protection of high arch, cushion-corrugations, make it the cheapest and safest carrier for your product. Why pay more for wood when a Hawkeye Case will give you full delivery insurance?

Cases are packed in bundles of ten, including top and bottom pads and sufficient tape for sealing. Every item you need for shipping is packed in a single unit.

The Hawkeye Case is designed for your convenience by the

Iowa Fiber Box Co.

Keokuk, Iowa

Citronelle Queens in the North

Our strain of Italians winter well in the North. Read the following letter.

Juntura, Ore., March 20th, 1925.

Citronelle Apiaries,
Citronelle Ala.

Dear Sirs: Enclosed find my check for \$10.00, for which send me 12 of your queens. The queens I bought of you last fall are fine and they all wintered in good shape, although we had the coldest winter ever recorded here; there were times when we had 48 degrees below zero, but colonies headed with your queens came through in the best shape of any in my apiary of 114 colonies.

Yours very truly,

CURTIS WHARTON.

QUEENS

Untested, 75c each; 12 for \$8.40, or 100 for \$60.00.
Select untested, \$1.00 each; 12 for \$9.00, or 100 for \$70.00.
Tested queens, \$1.50 each; breeders, \$5.00 to \$25.00 each.

PACKAGE BEES

Young queens furnished in each package, 2-lb. packages, \$3.00 each, any number; 3-lb. packages, \$4.00 each, any number.

Health certificate with each shipment. Satisfaction and prompt service guaranteed.

CITRONELLE APIARIES, Citronelle, Ala.

VALUE

OUR AIM: To give the utmost in values, by shipping promptly on order, goods of highest quality and
DURABILITY

THE A. I. ROOT CO. OF IOWA
COUNCIL BLUFFS, IOWA

Crop and Market Report

Compiled by M. G. Dadant.

We asked the following questions of reporters:

1. How is the crop so far?
2. Future prospects for 1925?
3. Any demand for new crop and at what prices?
4. What would you suggest for prices compared to what you got last year?
5. Give your idea of jobbing basis for white extracted and fancy comb.

THE CROP SO FAR

At the time the June report was written prospects had never been as favorable throughout the central west as they were then, owing to the fact that the white clover was covering the ground in large quantities and in perfect condition for harvesting the crop.

Since then weather conditions have so severely interfered with the honey crop as to make the final outcome considerable of a question as yet. We had, in the first place, a very severe frost throughout practically all the north, extending as far south as the Ohio River and even further. This frost did severe damage not only to fruit but also to blooming clover, killing practically every blooming thing.

In addition, the country has been caught in a severe drought which, at times, threatened to dry up the clover plants and in many sections severely interfered with the honeyflow. In our own vicinity around here the honeyflow has been practically stopped by the drought and bees have been robbing.

We have had many similar reports from different sections of the country. This being the case, the crop up to June 15, when this is written, has been a disappointment, and this applies not only to the central West and to the East and North, but to California, the Southwest sections and the southeast as well.

In the Southeast the tupelo flow has been disappointing, in fact practically nil.

In the Southwest the mesquite crop has not bloomed as it should generally in Texas, therefore the crop has been very short as well as in New Mexico. Arizona seems to have done somewhat better, although the crop is not normal there. However, they had a very nice flow from mesquite.

CROP PROSPECTS

Fortunately, within the last ten days there have been copious rains throughout the country, which have in a measure revived the drooping spirits of the beekeeper, and we still look for a fair crop in all clover regions. In the West this rainfall has been a boon to the beekeepers, who are now expecting at least an average crop. There has even been rain in California, which has encouraged the prospect somewhat, although the crop will fall far short of the average.

All in all, conditions are certainly not as alluring for a big honey crop as they were a month ago when the writer was inclined to believe that the crop would be so large as to interfere seriously with the price.

However, conditions have now changed and we do not believe that the crop will be anything phenomenal this year and, moreover, the price is going to be influenced

seriously by the fact that fruit has been badly hurt throughout the country.

In fact, in the central West sections and in many other sections the small berries crop is practically wiped out and the apple and other fruits have been seriously injured by the late frosts.

It would be our idea that probably the crop will be somewhat better than a year ago, but not sufficiently so to make up for the increased demand for honey due to the lack of carry-over and the lack of fruits. For instance, strawberries in our own home locality here sold at a price of about \$5.75 per crate whereas a year ago they were selling as low as \$3.50. Naturally, the housewife is not going to can much in the fruit line and is going to depend more on syrups when fall comes.

THE DEMAND

There is very little demand for honey just at present, although we believe that the demand for jobbing lots is considerably better than it was at this time a year ago.

The California beekeeper seems to be experiencing no difficulty in disposing of such orange honey as he has harvested.

In fact, southern California beekeepers who have harvested honey from this source are demanding a price of fourteen to fifteen cents per pound, whereas the average price last year was in the neighborhood of twelve cents.

We understand that some mesquite honey has sold already this year at a price of \$10.00 per case, which would make a price of about eight and a half cents per pound.

SUGGESTED PRICES

Practically all reporters were unanimous in suggesting that the prices this year for honey should not be any lower than a year ago and several suggested that the prices should rule higher because of the short crop and the small amount of fruit.

We hesitate making any suggestions as to prices yet this year because the honey crop is still in the making in most sections and the final outcome will not be determined for the next sixty days. However, we see no reason why, according to present conditions, the prices should vary a great deal from last year.

We are, therefore, appending herewith a list of suggested prices such as we used in August, 1924, and are using this for two reasons. In the first place, we want our beekeepers to see about what prices were suggested in 1924 and in the second place, we want to appeal to our reporters for the August issue to give us some criticism on the prices as listed. We are, therefore, giving them verbatim from the August, 1924, issue of the American Bee Journal.

We do not believe that the opening prices for honey this year should be any lower than those suggested in this table. There is always time to lower prices a little later in the season, but a price once established can only with difficulty be raised after the season has once started. For this reason it behooves us all to ask a good, round price for our honey at the start and the prices as listed below we do not believe are even a good, round price, but a fair average.

	5-lb. Retail	Retail 10-lb.	Ton Lots 5-gal. White	Carload 5-gal. White	Carload 5-gal. Amber	Comb Fancy Case	Comb Fancy Car lot	Bulk Comb Jobbing
East	\$1.25-\$1.50	\$2.20-\$2.50	12c	11c		\$7.00		
Southeast	.90-1.25	1.75-2.00	11c	10c	9-10c	5.50-6.00	4.50-5.75	17c
Texas and Southwest	.90-1.25	1.75-2.00	10c	9c	7-8½c			15-17c
Central West	1.15-1.35	2.00-2.25	13c	11-12c	8-9½c	6.50		
Plain States	1.00-1.15	2.00-2.15	12c	10-11c	8-9½c	6.00		
Inter-mountain	.90-1.25	1.75-2.00	10c	9c	7½-8½c	5.75	4.50-5.25	
Coast	.90-1.10	1.65-2.00	10c	8½-9c	7-8½c	5.50	4.25-4.75	

CLASSIFIED DEPARTMENT

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 15th of each month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

As a measure of protection to our readers, we require references of all new advertisers. To save time, please send the name of your bank and other references with your copy.

BEEES AND QUEENS

BRIGHT AMERICAN BEAUTY Italian queens for July, \$1.00 each; 3 or more, 75c; \$8.00 a dozen. Three-frame nuclei, \$5.00 each. Safe arrival and satisfaction guaranteed.

J. L. Morgan, Apalachicola, Fla.
Tupelo Apiaries.

PACKAGE BEES—Reduced prices.
Van's Honey Farms, Hebron, Indiana.

FOR SALE—Golden Italians bred for all the good qualities bees should possess, as well as for color. Queens only, untested, \$1.00 each; 6 for \$5.25; 12 or more, 75c each. Postpaid and safe arrival insured. State certificate of health included.

Hazel V. Bonkemeyer,
Randleman, N. C., Rt. 2.

WARRANTED pure mated Italian queens, \$1.00 each; mailed in my sure introducing cages; no blacks or hybrid bees around here, so the drones are pure Italian. Queens will be ready to mail about May 15.

Daniel Danielsen, Brush, Colo.

GOLDEN ITALIAN QUEENS for 1925; the big, bright, hustling kind (the kind that gets the honey). Satisfied customers everywhere. Untested, 90c each; 6, \$4.50; 12, \$9.00 \$70.00 per 100. Tested, \$1.50 each. Safe arrival guaranteed.

E. F. Day, Honoraville, Ala.

SUPERIOR Italian Queens and Bees, delivered—2-pound packages, 1 to 4, \$4.75; 5 to 15, \$4.60; 16 to 24, \$4.40; 25 to 49, \$4.25; 50 and up, \$4.00. Queens, 1, 75c; 12, \$8.50; 100, \$65.00. Guarantee everything.

W. C. Smith & Co., Calhoun, Ala.

SIMMONS QUEENS—Golden and 3-band; one, \$1.00; six, \$5.50; twelve, \$10.00. Two-frame nucleus, \$4.00; three-frame, \$5.25. No disease. Satisfaction guaranteed. Fairmount Apiary, Livingston, N. Y.

THREE-BANDED ITALIAN QUEENS, balance of season, 90c each, or 6 for \$4.75, or 12 for \$9.00, or 100 for \$65.00. I guarantee pure mating, safe arrival, satisfaction.

G. A. Taylor, Box 9, Luverne, Ala.

BARGAIN QUEENS—Bright 3-band Italian queens, ideally bred from best strains obtainable, at bargain prices during August, in lots of 100 or more at 65c each, if in one order. One untested at any time, \$1.00. No disease.

Chas. W. Quinn, Powhatan, Va.

FOR SALE—During the month of August I am going to offer for sale tested golden Italian queens at \$2.00 each. These queens are an extra fine grade and sure to please. Let me have your order now and say what date you want a queen. Satisfaction guaranteed.

J. F. Michael, Winchester, Ind., Rt. 1.

FOR SALE—Three-band Italian queens that produce hardy and gentle bees the kind that get the honey. Untested, 80c each; 6, \$4.75; 12, \$9.00. Tested queens, \$1.50 each. Safe arrival and satisfaction guaranteed.

Robt. B. Spicer, Wharton, N. J.

EUREKA QUEENS—Highly disease-resistant, American bred, copper colored Italians. Untested, July, one \$2.00, six \$11.00, twelve \$20.00. Tested, \$15.00 each.

Eureka Apiaries, A. C. F. Bartz, Mgr.
Jim Falls, Wis.

THREE-BAND ITALIAN QUEENS—One, select untested, \$1.00; one dozen, \$10.00. One select tested, \$1.50.

J. Allen, Catharine, Ala.

HIGH GRADE ITALIAN QUEENS—Bees are gentle and will do the work; \$1.00 each, six for \$5.00.

J. J. Scott Crowville, La.

GRAY CAUCASIANS, GRAY CARNIOLANS. Purity of race guaranteed. Fifteen years of real breeding and expert selection are behind them. Strong, long-lived and as producers of commercial honey have no superiors and few equals. Try them. Untested, \$1.50; tested, \$2.50; select tested, \$3.00 each. Ten per cent off on lots of one dozen. Rates on 100 or more. No disease.

Chas. W. Quinn, Powhatan, Va.

QUEENS from stock we have been selecting for years. "Montana Fourteen" Quality first, \$1.25 each.

B. F. Smith, Jr., Fromberg, Mont.

ITALIANS—Strong, hardy, vigorous. None better, few equal. Untested, \$1.00; tested, \$1.25. No disease.

Chas. W. Quinn, Powhatan, Va.

GOLDEN ITALIAN QUEENS—Untested, \$1.00; 6 for \$5.40; 12 or more, 80c each. Tested, \$1.50; select tested, \$2.50. Apiary inspected by state inspector; no disease found. Safe arrival and satisfaction guaranteed.

D. T. Gaster,
Rt. 2, Randleman, N. C.

FOR SALE—Italian queens; untested, 1 to 10, \$1.00 each; 11 to 25, 85c each; more than 25 75c each. Tested, \$1.50 each. Satisfaction guaranteed. Ready to ship June 1 to June 10.

R. B. Grout, Jamaica, Vt.

SHE-SUITS-ME QUEENS—Untested three-banders, \$1.00 each; 25 or more ordered in advance, 75c each. Safe in cage with initial order.

Allen Latham,
Norwichtown, Conn.

NORTH CAROLINA Bred Italian Queens of the Root strain of Italian Bees—Gentle and good honey gatherers. No disease. From May 10 until July 1, untested, \$1.00 each; \$10.00 per dozen. Tested, \$1.50 each; selected tested, \$2.25 each, and breeders \$10 each. Safe arrival and satisfaction guaranteed.

L. Parker,
R. F. D. No. 2, Benson, N. C.

GOLDEN ITALIAN QUEENS—The gentle and bright kind. Untested, \$2.00; dozen, \$14.00. Tested, \$4.00; breeders, \$5.00 to \$20.00.

J. B. Brockwell,
Barnetta, Va.

FOR SALE—Choice bright Italian queens. I have been building up this strain for the last 20 years for vigorous hustlers, good winterers, gentleness and fine color. These queens will equal the best on the market. Health certificate goes with queens. Prices: untested queen, \$1.25; 12 untested queens, \$12.00; 1 breeder, \$5.00.

Emil W. Gutekunst, Colden, N. Y.

TRY Peterman's Queens. Bred from select breeders, raised in standard frame, strong nuclei, well laid up before caging and last and most important, I select out only the largest, thrifty layers to sell, killing all others. From experience, I know this pays. Am building a business on a square deal basis. Prices: 1, \$1.25; 6, \$7.00; 12, \$13.00; 25 at \$1.00 each; 100, 90c each.

H. Peterman, Lathrop, Calif.

FOR SALE—Golden queens producing bees yellow to tip; untested, \$1.00; tested, \$1.50; select tested, \$2.50. Disease free; safe arrival and satisfaction guaranteed.

Address H. G. Karns, Victoria, Va.

BEEES AND QUEENS—Golden and three-banded Ready to ship March 20. Tested, each, \$1.00; 12, \$10.00; 50, \$40.00; 100, \$75.00. Untested, each 75c; 12, \$8.40; 50, \$32.50; 100, \$55.00. Satisfaction guaranteed.

I. N. Bankston,
Rt. 6, Dallas, Texas.

BRIGHT three-banded Italian queens. Guaranteed in every way; 33 years' experience. Every queen a good queen. Price list sent on request.

J. F. Diemer, Liberty, Mo.

FOR SALE—Italian queens ready May 15. One queen, \$1.00; 6 queens, \$5.50; 12 queens, \$10.00.

W. W. Talley,
R. 4, Greenville, Ala.

FOR SALE—Fine golden Italian queens, untested, \$1.00 each; tested, \$2.00. Ready for mailing May 20. Satisfaction guaranteed. J. F. Michael, Rt. 1, Winchester, Ind.

Wm. R. Stephens, Wingate, Indiana.

PURE ITALIAN QUEENS—Untested, \$1.00; tested, \$1.50; 2-lb. package, \$3.00. Add price of queen wanted. Safe arrival guaranteed after May 10. Write for prices on colonies.

Birdie M. Hartle
924 Pleasant St., Reynoldsville, Pa.

EDSON APIARIES are now booking orders for spring delivery of our renowned select untested queen bees at the following prices: One to fifty, \$1.25 each; fifty, \$57.50; 100, \$100. Prompt service and a guarantee embracing entire satisfaction of our stock.

Edson Apiaries, Gridley, Calif.

TEN YEARS of experience in breeding queens of quality Golden, also Gray Caucasian. Golden queens, one, \$1.25; dozen, \$11.50. Gray Caucasians, one, \$1.50; dozen, \$15.00. Pure mating. Safe arrival guaranteed in United States and Canada.

Tillery Bros., Rt. 5, Greenville, Ala.

LEATHER COLORED ITALIAN QUEENS—\$2.00; after June 1st, \$1.00. Tested, \$2.00.

A. W. Yates
15 Chapman St., Hartford, Conn.

TRY Peterman's queens for quality and a square deal. Circular free.

H. Peterman, Lathrop, Calif.

BRIGHT ITALIAN QUEENS—One, \$1.00; 6 for \$5.00 or 12 for \$10.00. Write for prices on large orders or package bees.

P. B. Skinner, Greenville, Ala.

MERRILL'S QUEENS—\$1.00 each.

R. E. Merrill, Muncy, Pa.

EARLY PACKAGE BEES & QUEENS that make a surplus the first season. Most northern breeder in California. See larger advt.

J. E. Wing, Chico, Calif.

PACKAGE BEES and three-band Italian queens that please. Our twenty years experience here in selective breeding of queens and the shipping of bees are at your service. No disease in this section. For prices, references, etc., write

Allenville Apiaries,
Allenville, Marengo County, Ala.

GOLDEN THREE-BANDED and Carniolan queens. Tested, \$1.00; untested, 75c each. Bees in 1-pound package, \$1.50; 2 pounds, \$2.50; 3 pounds, \$3.25. Safe delivery guaranteed.

C. B. Bankston,
Box 65, Buffalo, Leon Co., Texas.

IF you want good, bright Italian queens by return mail, send your order to us. Queens 75c each, \$8.50 per dozen. One pound bees with queen, \$3.00; two pounds bees with queen, \$4.75. We pay charges.

Graydon Bros.,
Rt. 4, Greenville, Ala.

ON receipt of order, one-frame nuclei with two lbs. bees and select untested queen, 1-25, \$3.25 each; 25 or more, \$3.00 each. Each additional pound bees, add 70c; additional frame of brood, 60c. Select tested queens, add 75c; 1 select untested queen, \$1.00 each; 25 or more, 90c. We guarantee safe delivery and a health certificate with each shipment. References, Avoyelles Bank, Moreauville, La.

C. A. Mayeux,
Hamburg, La.

HARDY ITALIAN QUEENS—\$1.00 each.

W. G. Lauver, Middletown, Pa.

TRY my Caucasian or Italian 3-frame nucleus, also queens, and be your own judge. The yard inspected by the requirements of the law. Italian queens 60c each by return mail.

Peter Schaffhauser,
Havelock, N. Car.

IMPORTED and domestic blood Italian queens—Select, \$1.00.

Joseph Painter, Bellefontaine, Ohio.

FOR SALE

FOR SALE—800 colonies and modern extracting outfit. Located in what is known as "The land of milk and honey" of the middle west. If you have cash and mean business write to "Beekeeper," care American Bee Journal.

FOR SALE—45 colonies pure bred Italian bees—requeened last fall; ten-frame, new standard equipment; 60 supers for comb honey. Guaranteed free from disease. Exceptional bargain.
L. J. Smith, Fayette, Ohio.

ON account of old age I am offering for sale my entire apiary of bees and supplies; all goods up to date.
J. H. Critchett, Ferry, Mich.

FOR SALE—Bees and equipment worth \$200, located in Lincoln County, Montana, on account of health of owner will be sacrificed for \$135 cash. Small modern home with one acre of land, healthful climate, good water, good school ready market for all honey from large apiary. Write for price and terms.
B. F. Smith, Jr., Fromberg, Mont.

FOR SALE—100 colonies bees in 14-frame hives, with 300 10-frame supers. All on Dadant's wired foundation. Everything new this spring. Crop goes with outfit. Fine business location. No disease.
S. F. Laurence, Dwight, N. Dak.

FOR SALE—Root 8-frame power extractor and gas engine, practically new.
A. G. Woodman Co.,
Grand Rapids, Mich.

TRY Rexford's Push-In comb introducing cage. Safe, automatic. No opening hive necessary after queen is in. Room for all combs. 35c; 3, \$1.00.
O. S. Rexford, Winsted, Conn.

WILL trade B flat tenor gold saxophone for colonies of bees or bee supplies. What have you?
H. L. Reichert,
Woodland Bee Farms,
Box 258, Carrington, N. Dakota.

WONDERFUL collection of beekeeping literature for sale. Will sacrifice. Write for particulars.
Louis A. Loboda
1301 Fifth Ave., Milwaukee, Wis.

HONEY AND BEESWAX

NEW COMB Honey now ready to ship.
H. G. Quirin, Bellevue Ohio.

HONEY FOR SALE—Best quality fancy Florida white tupelo. In 33-gallon barrels and 60-pound cans. Will not granulate. Sample 20c.
M. L. Nisbet & Brother, Bainbridge, Ga.

FOR SALE—White clover honey in new cases. No disease. Apiary inspected. Write for prices.
Newman I. Lyle,
Sheldon, Iowa.

HONEY FOR SALE in 60-lb. tins. Clover crystallized at 13c per lb.; clover liquid at 14c per lb.
Hoffman & Hauck, Inc.,
Ozone Park, N. Y.

WANTED—Car or less lots of extracted clover honey. Mail sample and quote lowest cash price.
A. W. Smith, Birmingham, Mich.

CHOICE SWEET CLOVER HONEY for sale at very attractive prices. State quantity desired and we will quote you f. o. b. Council Bluffs or Kansas City.
A. I. Root Company of Iowa,
Council Bluffs, Iowa.

BEESWAX WANTED—We need large quantities of beeswax and are paying good prices now. Ship to us at Hamilton, Ill., or Keokuk, Iowa, or drop us a card and we will quote f. o. b. here or your own station, as you may desire.
Dadant & Sons, Hamilton, Ill.

FOR SALE—White and amber extracted honey. Write for prices. State quantity wanted. Dadant & Sons, Hamilton, Illinois.

FOR SALE—Comb, extracted and chunk honey. Prices on request. Samples 15c.
F. W. Summerfield, Waterville, Ohio.

HONEY FOR SALE—Any kind, any quantity.
The John G. Paton Co.,
217 Broadway, New York.

FOR SALE—Our own crop white clover and amber fall honey in barrels and cans; also white alfalfa in cans. State quantity wanted and we will quote prices. Samples on request.
Dadant & Sons, Hamilton, Ill.

FOR SALE—White and water white sweet clover honey; put up in 5-gallon cans. Strictly first-class in every way. Write for prices, stating quantity wanted.
Dadant & Sons, Hamilton, Ill.

FOR SALE—White honey in 60-lb. cans; also Porto Rican in 50-gal. barrels. Samples and prices on request.
A. I. Root Co.,
16-18 Jay St. New York, N. Y.

"BEEWARE" and Dadant's Wired Foundation for the Northwest. Catalog prices.
F. O. B. Fromberg, Montana. Beeswax wanted. Write for prices.
B. F. Smith, Jr., Fromberg, Mont.

SUPPLIES

FOR SALE—Modified Dadant hives and supers in good condition. Combs are good and free from disease.
William Larsen, Quinnesec, Mich.

FOR SALE—200 new ten-frame cypress hive bodies; corners halved complete with Hoffman frames KD, \$1.25 each; lots of 50, \$1.00 each.
The Silsbee Apiaries,
Bath, N. Y., Rt. 1.

400 CLEAN 60-lb. cans and cases to exchange for honey.
H. Wittman, Lincoln, Neb.

FOR SALE—Second-hand 5-gallon cans. Only good cans offered. Two cans each case. Per 10 cases, \$6.50; per 25 cases, \$15. Ask for prices on quantity lot.
A. I. Root Co., 230 W. Huron St.,
Chicago, Ill.

FOR SALE—Good second-hand 60-lb. cans, two cans to a case, boxed. We have large stocks of these on hand. Please write for prices if interested. We are offering only good cans and good cases.
C. H. W. Weber & Co., Cincinnati, O.

MISCELLANEOUS

THE DADANT SYSTEM IN ITALIAN—The "Dadant System of Beekeeping" is now published in Italian, "Il Sistema d'Apicoltura Dadant." Send orders to the American Bee Journal. Price \$1.00.

WE HAVE NOW ON HAND, from Paris, a number of copies of the excellent work of Perret-Maisonneuve, in French, entitled "L'Apiculture Intensive & L'Elevage des Reines." The first shipment was delayed over two months. The price of this very progressive work is \$1.50 by mail, prepaid.
American Bee Journal, Hamilton, Ill.

WESTERN HONEY BEE, 428 S. Hewitt St., Los Angeles, Calif., published by Western beekeepers, where commercial honey production is farther advanced than in any other section of the world. \$1.00 per year. Send for sample copy.

WESTERN BEEKEEPERS—We can demonstrate that you can save money on buying bee supplies of best quality. Write for our latest price list.
The Colorado
Honey Producers' Association,
Denver, Colorado.

GLEANINGS IN BEE CULTURE, published at Medina, Ohio, is the most carefully edited bee journal in the world. Its editor-in-chief is George S. Demuth. Its field editor is E. R. Root. Ask for sample copy.

HAVE YOU any Bee Journals or bee books published previous to 1900 you wish to dispose of? If so send us a list.
American Bee Journal, Hamilton, Ill.

MAKE queen introduction sure. One Safin cage by mail, 25c; 5 for \$1.00.
Allen Latham, Norwichtown, Conn.

WANTED

HELP WANTED—Good reliable helper wanted in my bee yards for summer months. Write at once, giving age, experience and wages desired.
A. G. Kuersten, Burlington, Iowa.

WANT—JULY or August package bees, colonies or equipment, for good interest in Minnesota land, forty or quarter.
A. M. Wise, Appleton, Minn.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering.
Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

Coming Meetings

August 6—Livingston, N. J., at the apiary of T. A. Morrow.

August 7—Theresa, N. Y., at the apiary of A. A. French & Son.

August 25-26—Farmers' Week, University of New Hampshire, Durham.

August 29—Providence, Rhode Island.

September 7—Baltimore, Md., at the Timonium Fair, near Baltimore.

September 8-9—Eastern Tennessee; place to be announced later.

September 10-11—Charlotte, N. C.; a combined meeting of North and South Carolina State Beekeepers' Associations. This gives promise of being one of the biggest meetings ever held in this section of the country.

September 12—Arrangements will be made for meetings in both North and South Carolina, to give the speakers an opportunity of seeing other representative sections in these states.

September 14-15—Valdosta, Ga., (J. J. Wilder promises a good meeting, the second day being given to visits of apiaries.)

Louisiana has been heard from, but no place or date has been set.

J. E. Eckert.

State Association Membership

The following are the memberships of many of the state associations as received by us in February, 1925: Indiana, 1,750; Ontario, 900; Iowa, 750; Illinois, 700; Texas, 600; Wisconsin, 567; New Jersey, 462; Pennsylvania, 376; Michigan, 265; Maine, 265; Ohio, 238; Washington, 225; Nebraska, 175; Minnesota, 156; Virginia, 150; North Carolina, 150; Eastern Massachusetts, 150; Connecticut, 147; Tennessee, 141; California, 136; North Dakota, 121; Missouri, 80; New Hampshire, 75; Montana, 64; Oregon, 50; Wyoming, 41; Utah, 38; Rhode Island, 35; Arkansas, 20; total, 8,226.—(Lewis Bulletin.)

The Water-Formalin Solution

Embodies latest principles of economy and effectiveness in sterilizing combs infected with American Foulbrood.

It is ALWAYS successful where a DEPENDABLE quality is PROPERLY applied. Water-Formalin Solution is MISREPRESENTED by dealers in Alcohol-Formalin. In comparative tests at Ontario Agricultural College, Alcohol-Formalin failed to show ANY advantage.

Patented Alcohol-Formalin solution costs 2½ times as much per comb as our Reprocessed Water-Formalin Solution.

Make your own comparison, then. Save your money and disease-infected combs by using

It is not
Patented
—
It does not
soften
the Combs



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or Pierce Building, St. Louis, Mo., are Agents for D. & B. Solution.

QUEENS



"The best we know how
to produce."

Queen rearing is now going on "a humming" at Vincennes and we never have turned out as high grade queens as this year. We are using several breeders that are very prolific, whose bees are very yellow, gentle and good honey getters. In addition, we still have Queen Alice, our three-banded wonder, who is now going strong in her ninth year. She has never swarmed, although run for comb honey, and her bees are so gentle that no smoke is needed when opening the hive.

Write for our twenty-fifth anniversary Catalog, which gives full particulars regarding our stock.

PRICES FOR REMAINDER OF THE SEASON:

One to four, inclusive, \$1.50 each; five to nine, inclusive, \$1.45 each; ten to twenty-four, inclusive, \$1.40 each; twenty-five to forty-nine, inclusive, \$1.35 each; fifty to seventy-four, inclusive, \$1.30 each; seventy-five to ninety-nine, inclusive, \$1.25 each; one hundred or more, \$1.20 each.

Breeding queens, guaranteed service for the season, \$10 each. Our book, "Queen Rearing Simplified," \$1.25, postpaid. Jay Smith Push-in Introducing Cage, 35c each, postpaid.

JAY SMITH

Route 3, Vincennes, Indiana

Leather Colored Italian Bees and Queens

ROOT AND MOORE STRAIN

100 Queens at -----	\$.75 each	25 Queens at -----	\$.90 each
50 Queens at -----	\$.80 each	Less Queens at -----	1.00 each

Packages \$2.50 per 2 pounds

Delivery after March 1st. Satisfaction guaranteed.

ROY C. PATTEN

King's Lane, Whittier, Calif.

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Now

is the time to order honey labels, before the rush begins. We have a reserve stock of over a million awaiting your imprint.

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Our catalogue contains some snappy new designs and we still have the old stand-bys that have been favorites with honey producers for many years.

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